Soil survey of

Blair County, Pennsylvania

United States Department of Agriculture, Soil Conservation Service
in cooperation with the Pennsylvania State University, College of Agriculture, and the
Pennsylvania Department of Environmental Resources, State Conservation Commission

HOW TO USE

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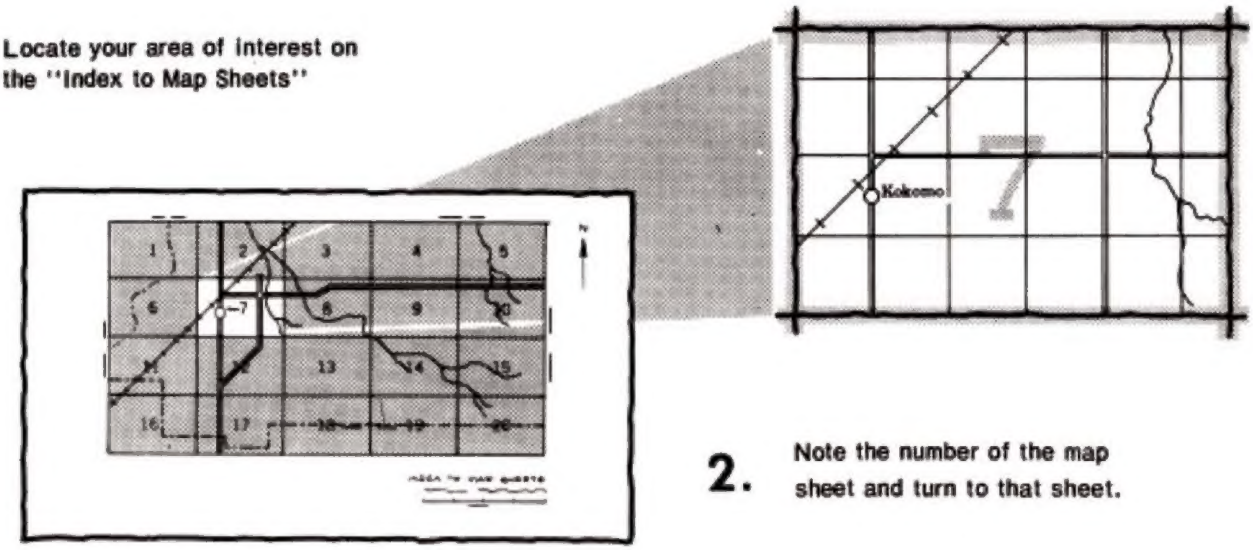

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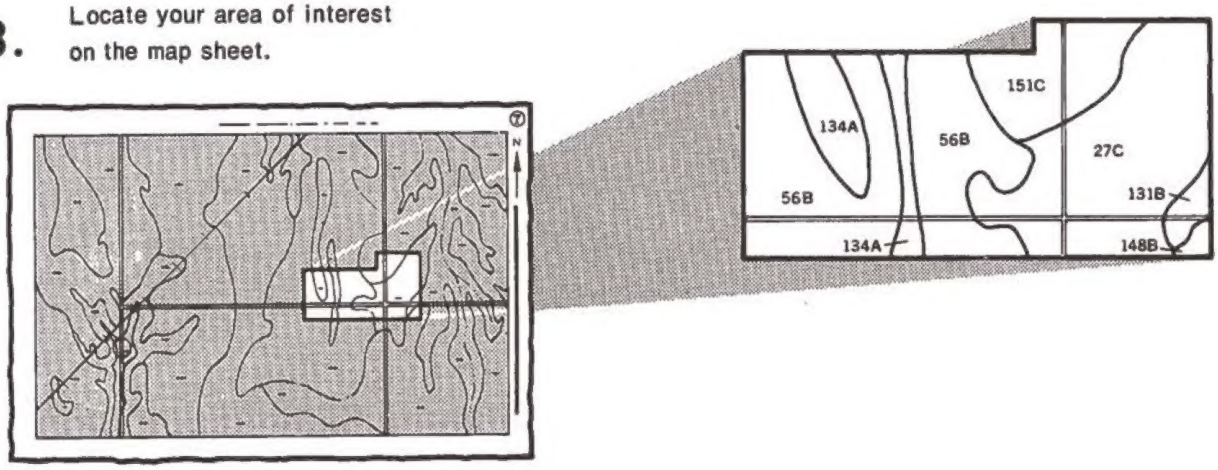

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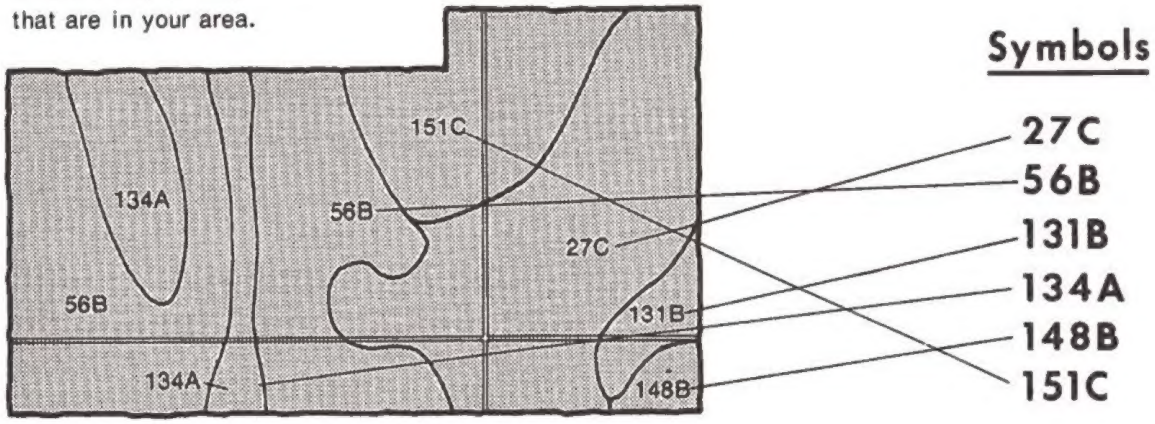

THIS SOIL SURVEY

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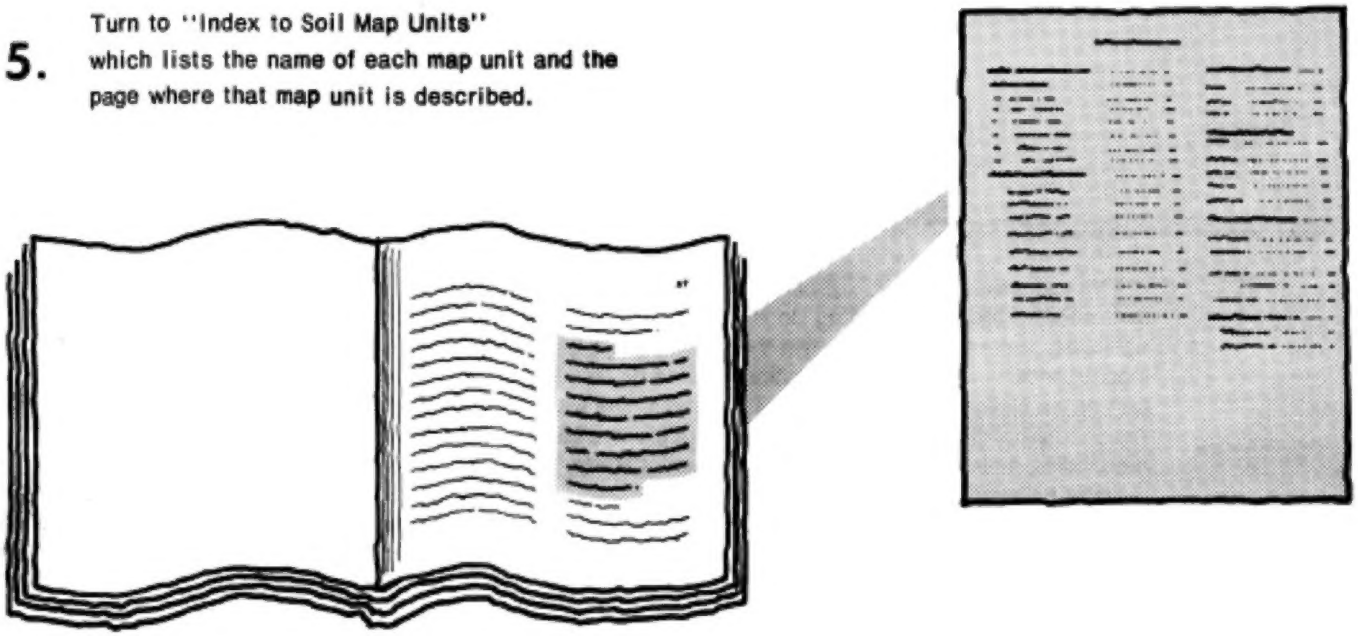
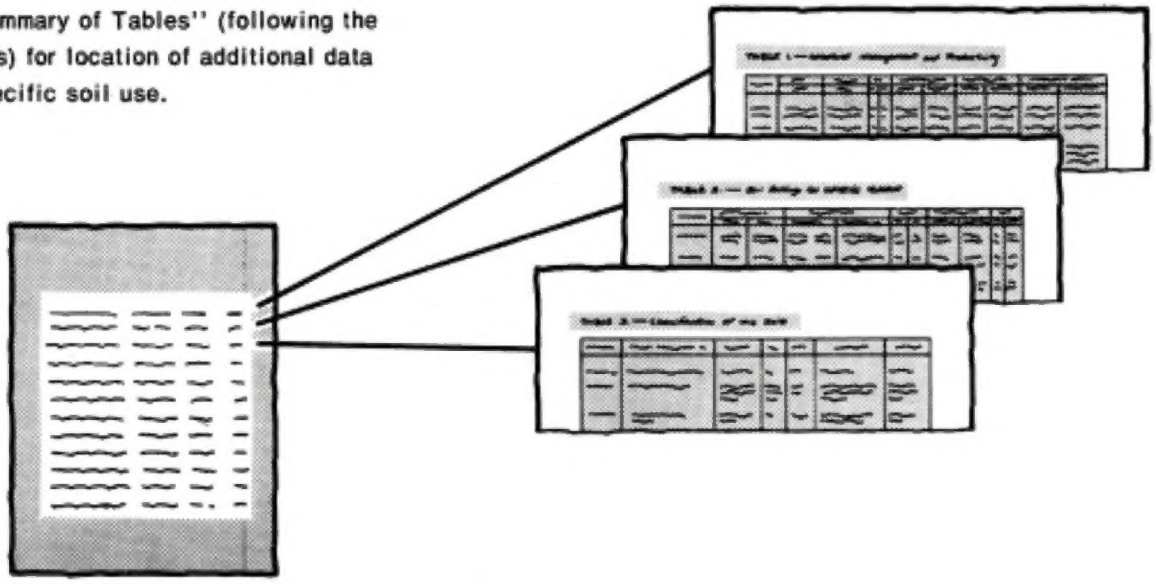


6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was performed in the period 1968-77. Soil names and descriptions were approved in 1978. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1978. This survey was made cooperatively by the Soil Conservation Service, The Pennsylvania State University, College of Agriculture, and the Pennsylvania Department of Environmental Resources, State Conservation Commission. Financial assistance was provided by the Blair County Board of Commissioners. The survey is part of the technical assistance furnished to the Blair County Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: Stripcropping protects this area from erosion. The soil is Hublersburg cherty silt loam, 3 to 8 percent slopes.

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foreword

This soil survey contains information that can be used in land-planning programs in Blair County. Of prime importance are the predictions of soil behavior for selected land uses. Also highlighted are limitations or hazards to land uses that are inherent in the soil, improvements needed to overcome these limitations, and the impact that selected land uses will have on the environment.

This soil survey has been prepared for many different users. Farmers, foresters, and agronomists can use it to determine the potential of the soil and the management practices required for food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use it to plan land use, select sites for construction, develop soil resources, or identify any special practices that may be needed to insure proper land use. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the soil survey to help them understand and enhance the environment.

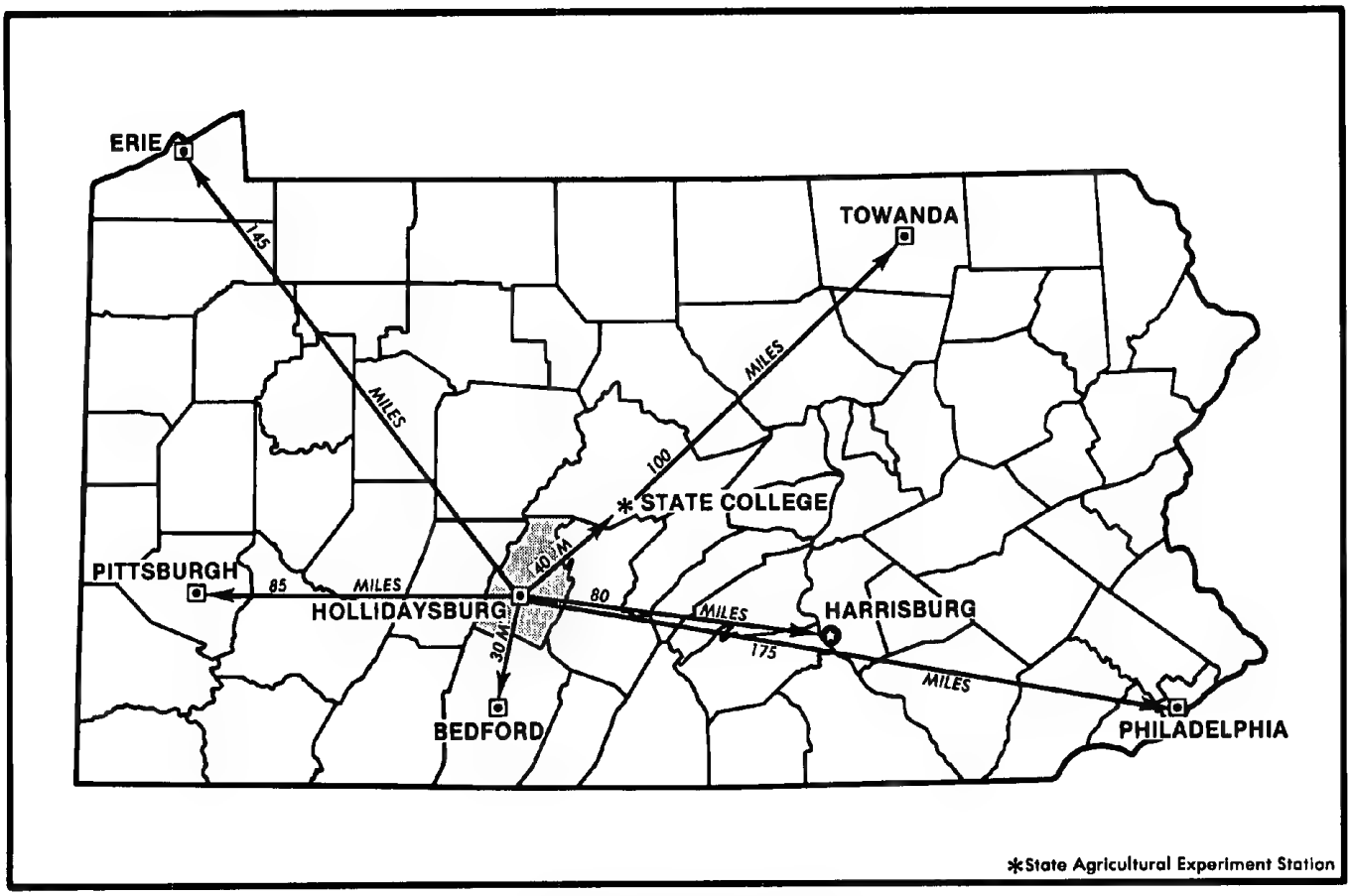
Great differences in soil properties can occur within short distances. Soils may be seasonally wet or subject to flooding. They may be shallow to bedrock. They may be too unstable to be used as a foundation for buildings or roads. Very clayey or wet soils are poorly suited to septic tank absorption fields. A high water table makes a soil poorly suited to basements and underground installations.

This report consists of two parts. The first part is the description, potentials, hazards, and limitations of all soils in Blair County. The second part of the report is detailed maps showing the soils on every acre of land in the county.

It is impossible to explain all the ways that this soil survey report may be used. Additional information and assistance can be obtained at your local office of the Soil Conservation Service or the Cooperative Extension Service.

I believe that you will find this soil survey to be useful in the conservation, development, and productive use of soil, water, and other resources.

Graham T. Munkittrick
State Conservationist
Soil Conservation Service



Location of Blair County in Pennsylvania.

Soil survey of
Blair County, Pennsylvania

By Edward J. Merkel, Soil Conservation Service

Fieldwork by Donald L. Hipes and Thomas J. Craft, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service
in cooperation with The Pennsylvania State University, College of Agriculture
and the Pennsylvania Department of Environmental Resources,
State Conservation Commission

BLAIR COUNTY is in the south-central part of Pennsylvania. The surface area of the county is 530 square miles, or 339,200 acres. Woodland covers about 65 percent of the acreage. The county is part of the Susquehanna River Basin. It is drained by two tributaries of the Juniata River: the Little Juniata and the Frankstown Branch.

The original settlement of Blair County took place in 1748 in what is now Frankstown. The towns of Hollidaysburg, Newry, and Williamsburg were settled later in the 18th century; Altoona and Tyrone were mainly developed in the 1850's. The county itself was established in 1846 from parts of Bedford and Huntington Counties.

Two major Federal highways cross the county—U.S. Route 22 from east to west and U.S. Route 220 from north to south. The county has a rail network that connects most of the major towns and cities, and the county airport near Martinsburg is the center for air travel facilities.

Dairying is the main farm enterprise in Blair County. Other types of farming include vegetable and fruit production and raising poultry, beef, hogs, and sheep. The average-size farm is about 157 acres, and the 1969 census showed one farm consisting of at least 1,000 acres. Lumber, railroad ties, and pulp wood for paper manufacturing are the main products derived from the wooded areas.

According to the 1970 census, the population of Blair County was 137,270. The population has been decreasing since 1940. Hollidaysburg, the county seat, had a population of 6,262. The largest city is Altoona, a few miles north of Hollidaysburg, with a population of 63,115.

general nature of the survey area

Bruce A. Benton, geologist, Soil Conservation Service, helped prepare this section.

This section provides information about the physiography and geology of the county and describes the mineral and water resources and the climate.

physiography and geology

The majority of the county is in the Valley and Ridge physiographic province; the western third is in the Appalachian Plateau physiographic province. The Valley and Ridge province forms a series of parallel valleys and ridges oriented northeast-southwest, while the Appalachian Plateau province has high, rounded ridges and stream-dissected valleys. The elevation in the county ranges from a high of about 3,000 feet in the southwest corner to a low of 720 feet where the Juniata River crosses into Huntington County.

Rocks of Pennsylvanian and Mississippian age are the youngest in the county and outcrop in the Appalachian Plateau province. They are composed primarily of a cyclic sequence of shale, siltstone, sandstone, and some limestone and coal. The dominant soils in this area are of the Laidig-Hazleton-Clymer association.

The oldest rocks in the county are in the Valley and Ridge province. The more resistant Ordovician and Silurian quartzites, sandstones, conglomerates, and shales form the ridges and slopes in the province. The soils of the Laidig-Hazleton-Buchanan association are dominant on the ridges.

The Tuscarora formation (quartzite sandstone) caps several prominent ridgetops in the county—the Bald

Eagle, Brush, and Canoe Mountains in the north and central parts of the county and the Lock, Loop, and Dunning Mountains in the southern part. Soils of the Laidig-Hazleton-Buchanan association dominate these areas.

The Nittany Valley, the Canoe Valley, and Morrison Cove are underlain by Cambrian and Ordovician limestone and dolomite. The major soils in these areas are of the Hublersburg-Murrill-Opequon and Edom-Opequon associations. The long, narrow valley running nearly the full length of the county from Tyrone to Hollidaysburg is composed of Silurian limestone and Devonian shale. The Morrison association is dominant over limestone, and the Berks-Brinkerton-Weikert association is dominant over shale. The Basher-Monongahela-Purdy association is on flood plains and terraces in this area. Between the valley and the Allegheny Front lies a band of Devonian shale that also runs the full length of the county. The major soils in this band are in the Leck Kill-Meckesville-Albrights association and the Berks-Brinkerton-Weikert association.

Regional uplift and compression from the southeast during the Permian period caused intense folding and faulting of rocks in the Valley and Ridge province and caused only a regional northwest dip of bedding in the Appalachian Plateau province. The majority of the faulting occurred in the limestone valley near the eastern border. The structural disturbance resulted in the formation of the northeast-southwest oriented valleys and ridges. Erosion over the course of 200 million years has severely reduced the mountains to their present topography.

mineral resources

Deposits of limestone, sandstone, shale, clay, and coal provide most of the mineral resources in the county. All mining is done by quarrying, open-pit, or strip-mining methods.

Limestone is mined from the Cambrian and Ordovician formations in the valleys of the central and southern parts of the county. It is mainly used for aggregate and agricultural lime.

Sandstone, used in the production of crushed and broken stone, is mined from Silurian quartzite in the southern part of the county. Middle Devonian sandstone is mined for construction sand and gravel in an area east of Hollidaysburg.

Deposits of clay and shale of Pennsylvanian and Devonian age are mined in the western, central, and southern parts of the county. This material is used primarily for fill, road building, and refractories.

Coal mining occurs on a limited basis. One strip mine in the western part of the county produces medium- to low-volatile bituminous coal. The seam is the Upper Freeport coal of Pennsylvanian age.

water resources

Blair County has a mean annual precipitation of 36 inches and a mean annual runoff of 20 inches. The most productive ground-water yields in the county are from Cambrian and Ordovician carbonates, the rocks of the Clinton Group (Silurian), the Helderberg formation, and the Oriskany formation (Devonian).

Sources of water in the county come from dug wells, springs, drilled wells, and storage reservoirs, but most of the ground-water supplies are from drilled wells.

climate

Prepared by the National Climatic Center, Asheville, North Carolina.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Martinsburg in the period 1951 to 1975. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 29 degrees F, and the average daily minimum temperature is 22 degrees. The lowest temperature on record, which occurred at Martinsburg on January 24, 1963, is -12 degrees. In summer the average temperature is 70 degrees, and the average daily maximum temperature is 80 degrees. The highest recorded temperature, which occurred at Martinsburg on June 21, 1953, is 97 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 36 inches. Of this, 20 inches, or 60 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 16 inches. The heaviest 1-day rainfall during the period of record was 4.53 inches at Martinsburg on September 28, 1967. Thunderstorms occur on about 20 days each year, and most occur in summer.

Average seasonal snowfall is 36 inches. The greatest snow depth at any one time during the period of record was 14 inches. On an average of 21 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 60 percent of the time possible in summer and 35 percent in winter. The prevailing wind is from the west-southwest. Average windspeed is highest, 11 miles per hour, in winter.

how this survey was made

Soil scientists made this survey to learn what soils are in the survey area, where they are, and how they can be used. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; the kinds of native plants or crops; and the kinds of rock. They dug many holes to study soil profiles. A profile is the sequence of natural layers, or horizons, in a soil. It extends from the surface down into the parent material, which has been changed very little by leaching or by plant roots.

The soil scientists recorded the characteristics of the profiles they studied and compared those profiles with others in nearby counties and in more distant places. They classified and named the soils according to nationwide uniform procedures. They drew the boundaries of the soils on aerial photographs. These photographs show trees, buildings, fields, roads, and other details that help in drawing boundaries accurately. The soil maps at the back of this publication were prepared from aerial photographs.

The areas shown on a soil map are called map units. Most map units are made up of one kind of soil. Some are made up of two or more kinds. The map units in this survey area are described under "Detailed soil map units."

While a soil survey is in progress, samples of some soils are taken for laboratory measurements and for engineering tests. All soils are field tested to determine their characteristics. Interpretations of those characteristics may be modified during the survey. Data are assembled from other sources, such as test results, records, field experience, and state and local specialists. For example, data on crop yields under defined management are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it can be used by farmers, woodland managers, engineers, planners, developers and builders, home buyers, and others.

This survey provides updated and additional information to a soil survey of Blair County published in 1915 and contains larger maps that show the location of the soils in greater detail.

general soil map units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each association on the general soil map is a unique natural landscape. Typically, an association consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one association can occur in others but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one association differ from place to place in slope, depth, drainage, and other characteristics that affect management.

descriptions of associations

Areas dominated by soils formed in material derived from sandstone and quartzite and from sandstone and shale.

The two associations in this group make up about 40 percent of the county. The soils are mostly deep and well drained, but some are moderately well drained and somewhat poorly drained.

1. Laidig-Hazleton-Buchanan association

Gently sloping to very steep, deep, well drained to somewhat poorly drained soils weathered from acid sandstone, quartzite, and shale; on mountain ridges and foot slopes

This association is mainly in the eastern part of the county and covers about 24 percent of the county. The landscape mainly consists of steep mountain ridges. The association is about 32 percent Laidig soils, 18 percent Hazleton soils, 17 percent Buchanan soils, and 33 percent soils of minor extent (fig. 1).

The Laidig soils are well drained and have a firm and brittle layer in the subsoil. The soils formed in colluvium that accumulated on upper foot slopes and lower and middle mountain slopes.

The Hazleton soils are well drained. They formed in residuum on the tops and side slopes of mountain ridges.

The Buchanan soils are moderately well drained and somewhat poorly drained and have a firm and brittle layer in the subsoil. The soils formed in colluvium that accumulated on lower mountain foot slopes. These soils have a seasonal high water table.

The minor soils on uplands include deep, well drained Meckesville, Murrill, and Leetonia soils; moderately deep, well drained Berks soils; moderately deep, well drained to excessively drained Lehew soils; deep, moderately well drained and somewhat poorly drained Albrights soils; deep, poorly drained Andover Variant soils; and Dystrochrepts and Rubble land. Udifluvents are on flood plains.

This association is mostly in woodland. A few small areas are farmed or used for community development. Large areas of State game lands are in this association. The potential of the soils for most uses is limited by steep slopes and an extremely stony surface. Some areas have a seasonal high water table and slow permeability.

2. Laidig-Hazleton-Clymer association

Gently sloping to very steep, deep, well drained soils weathered from acid sandstone, quartzite, and conglomerate; on broad mountaintops

This association is in the western part of the county on the Allegheny Plateau and the Allegheny Front. It covers about 16 percent of the county. The association is about 40 percent Laidig soils, 30 percent Hazleton soils, 10 percent Clymer soils, and 20 percent soils of minor extent.

The Laidig soils have a firm and brittle layer in the subsoil. The soils formed in colluvium in narrow to moderately broad drainage basins on the Allegheny Plateau and in colluvium on side slopes on the Allegheny Front.

The Hazleton soils formed in residuum on ridges on the top of the Allegheny Plateau. The Clymer soils formed in residuum on ridges on the Allegheny Plateau.

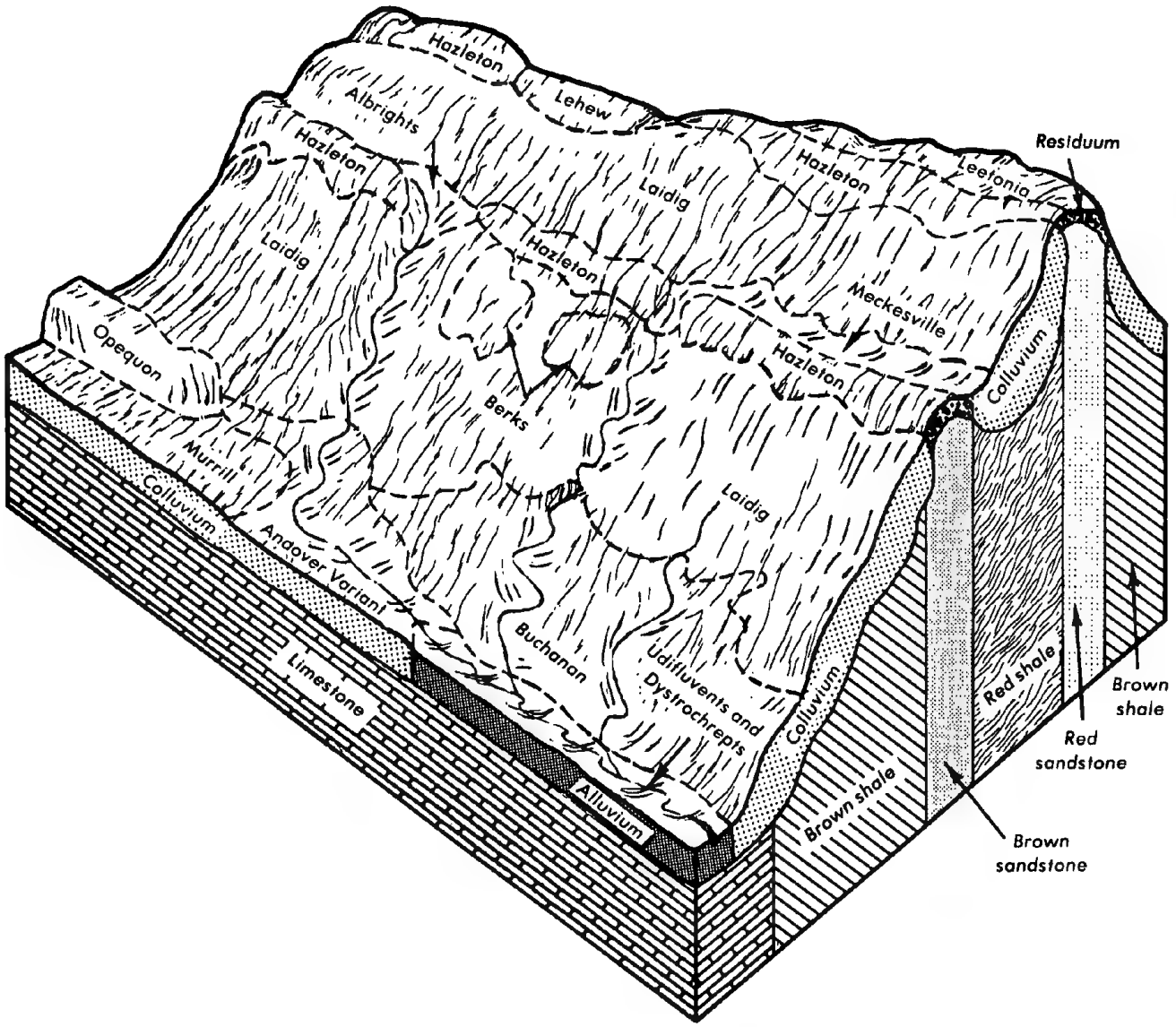


Figure 1.—Typical pattern of soils and underlying material in the Laidig-Hazleton-Buchanan association.

The minor soils on uplands include deep, well drained Leetonia and Meckesville soils; moderately deep, well drained Gilpin and Berks soils; deep moderately well drained Wharton soils; and deep moderately well drained and somewhat poorly drained Buchanan soils. Udifluvents and Dystrochrepts are minor soils on narrow flood plains.

This association is mostly wooded. Extensive areas are in game land, and some areas have been strip mined for coal. A few small areas are farmed or used for homesites. Most areas are too stony for farming, but where stones are not a limitation, the soils have some potential for farming. The main limitations for most uses are the stones on the surface and slow permeability.

Areas dominated by soils formed in material derived from shale and from shale and sandstone

The two associations in this group make up about 29 percent of the county. The soils are mostly moderately deep and deep and are well drained. Some are shallow to bedrock, and some are poorly drained, somewhat poorly drained, and moderately well drained.

3. Berks-Brinkerton-Weikert association

Gently sloping to very steep, deep to shallow, well drained and poorly drained soils weathered from olive, brown, and yellowish brown acid shale and colluvium derived from shale; on ridges, on foot slopes, and in drainageways

This association is in a wide band in the western part of the county. The association covers about 17 percent of the county. The landscape consists of rolling hills, steep slopes, narrow valleys, and narrow to moderately wide foot slopes. The association is about 40 percent Berks soils, 11 percent Brinkerton soils, 10 percent Weikert soils, and 39 percent soils of minor extent (fig. 2).

The Berks soils are moderately deep and well drained. They formed in residuum on the tops and side slopes of ridges.

The Brinkerton soils are deep and poorly drained and have a firm and brittle layer in the subsoil. They formed in colluvium on the side slopes and foot slopes of ridges and in drainageways. These soils have a high water table.

The Weikert soils are shallow and well drained. They formed in residuum on the tops and side slopes of ridges.

The minor soils on uplands include deep, well drained Bedington and Leck Kill soils; deep, moderately well drained Ernest soils; moderately deep, moderately well drained and somewhat poorly drained Blairton soils. Udifluvents and Dystrochrepts are on narrow flood plains.

Most areas of the association are wooded or in idle cropland (fig. 3). A few small areas are farmed, but the soils have little potential for general farming because of

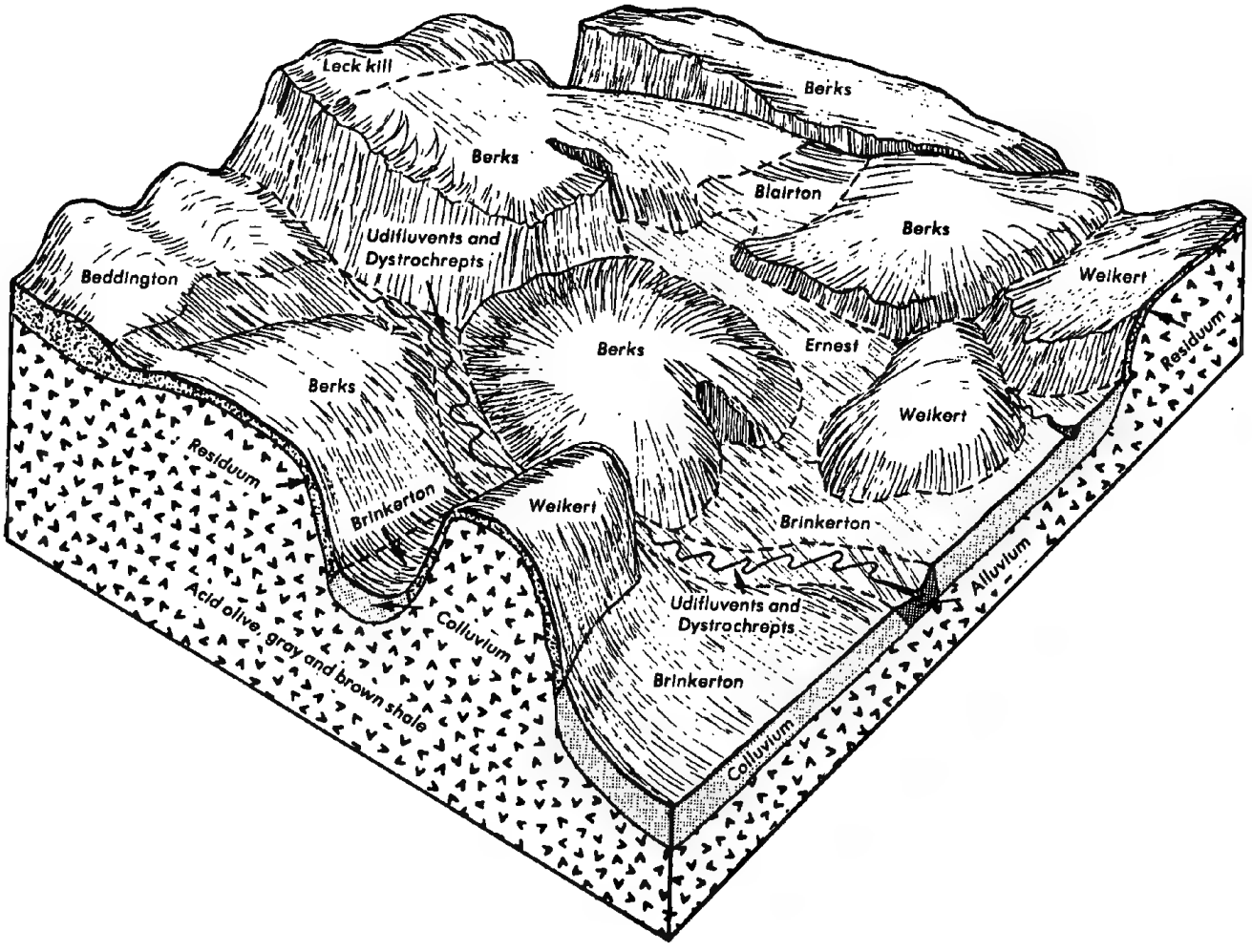


Figure 2.—Typical pattern of soils and underlying material in the Berks-Brinkerton-Weikert association.

steep slopes, very low available water capacity, and a high water table. Some areas are in urban development, but the potential for this use is limited by the depth to bedrock, steep slopes, and high water table.

4. Leck Kill-Meckesville-Albrights association

Gently sloping to very steep, deep, well drained to somewhat poorly drained soils weathered from acid red shale and sandstone; on ridges, on foot slopes, and in drainageways

This association is in the western part of the county at the base of the Allegheny Front. It covers about 12 percent of the county. The landscape consists of rolling hills with moderately wide foot slopes and narrow drainageways. The association is about 53 percent Leck Kill soils, 26 percent Meckesville soils, 9 percent Albrights soils, and 12 percent soils of minor extent (fig. 4).

The Leck Kill soils are well drained. They formed in residuum on ridges.

The Meckesville soils are well drained and have a firm and brittle layer in the subsoil. The soils formed in colluvium on foot slopes and in drainageways.

The Albrights soils are moderately well drained and somewhat poorly drained and have a firm and brittle layer in the subsoil. They formed in colluvium on foot slopes and in drainageways. These soils have a seasonal high water table.

The minor soils on uplands are deep, well drained Bedington and Laidig soils; moderately deep, well drained Berks soils; and poorly drained Brinkerton soils. Udifluvents and Dystrochrepts are on narrow flood plains.

This association is mostly in woodland. Some areas are farmed and have good potential for this use where stones on the surface or slope is not a limitation. Other areas, particularly on the Leck Kill soils, are used for and have some potential as housing sites. The main limitations for most uses in the association are stones on the surface, the seasonal high water table, and moderately slow permeability.

Figure 3.—An area of the Berks-Brinkerton-Weikert association.

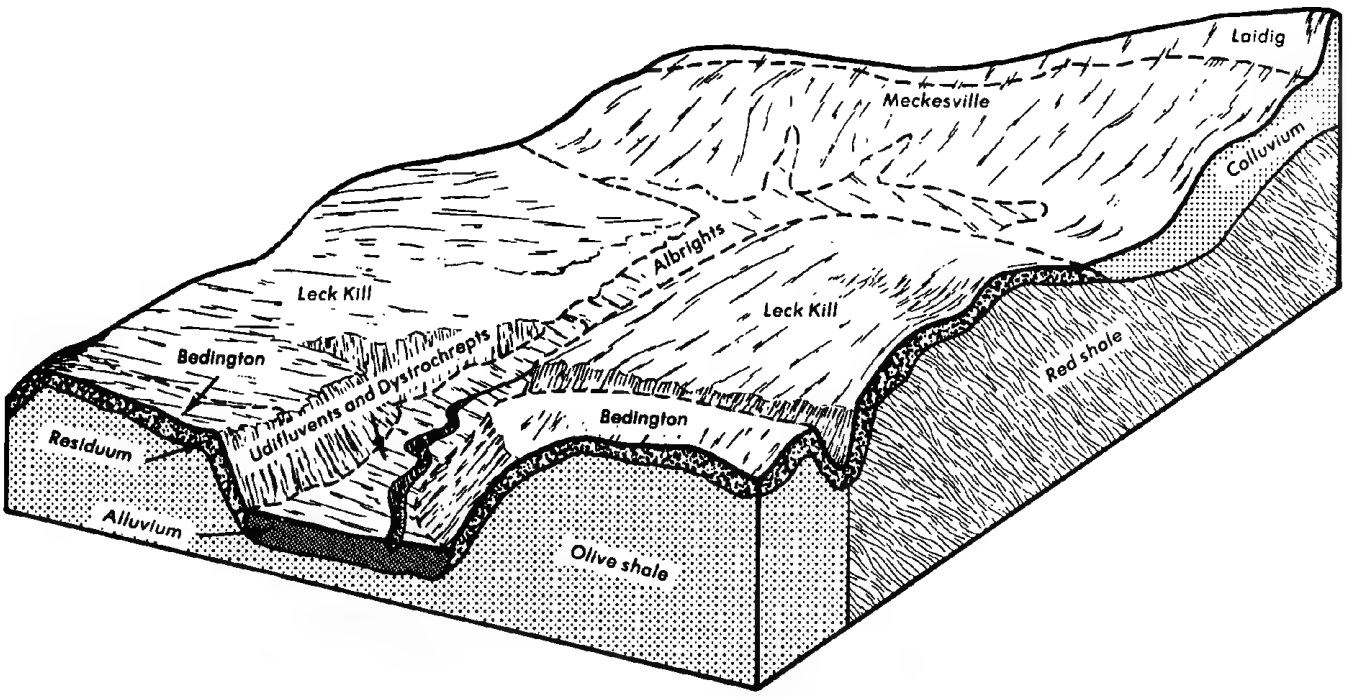


Figure 4.—Typical pattern of soils and underlying material in the Leck Kill-Meckesville-Albrights association.

Areas dominated by soils formed in material derived from limestone, calcareous shale, and sandstone

The three associations in this group make up about 27 percent of the county. The soils are mostly deep and well drained. Some are shallow to bedrock.

5. Hublersburg-Murrill-Opequon association

Gently sloping to very steep, deep and shallow, well drained soils weathered from limestone and sandstone; on upland valley slopes and mountain foot slopes

This association is mostly in the eastern part of the county. The association covers about 14 percent of the county. The landscape consists of gently sloping to very steep foot slopes and hills in upland valleys. The areas are marked by sinkholes and drainageways. The association is about 55 percent Hublersburg soils, 10 percent Murrill soils, 8 percent Opequon soils, and 27 percent soils of minor extent (fig. 5).

The Hublersburg soils are deep. They formed in residuum on hills in upland valleys.

The Murrill soils are deep. They formed in colluvium on mountain foot slopes.

The Opequon soils are shallow. They formed in residuum on hills in upland valleys.

The minor soils on uplands include deep, well drained Edom, Hagerstown, and Laidig soils; deep, moderately well drained Clarksburg soils; deep, moderately well drained and somewhat poorly drained Buchanan soils; and deep, somewhat poorly drained Wharton Variant soils. Deep, moderately well drained Lobdell soils are on flood plains.

This association is mostly in cropland. Most soils in the association have good potential for this use. The shallow depth to bedrock, the hazard of ground-water contamination from septic systems, and slope are the main limitations for most uses.

6. Edom-Opequon-Morrison association

Gently sloping to moderately steep, deep and shallow, well drained soils weathered from limestone, calcareous shale, and some sandstone; on ridges and valley slopes

This association is mostly in the central part of the county. The association covers about 8 percent of the county. The landscape consists of ridges and rolling,

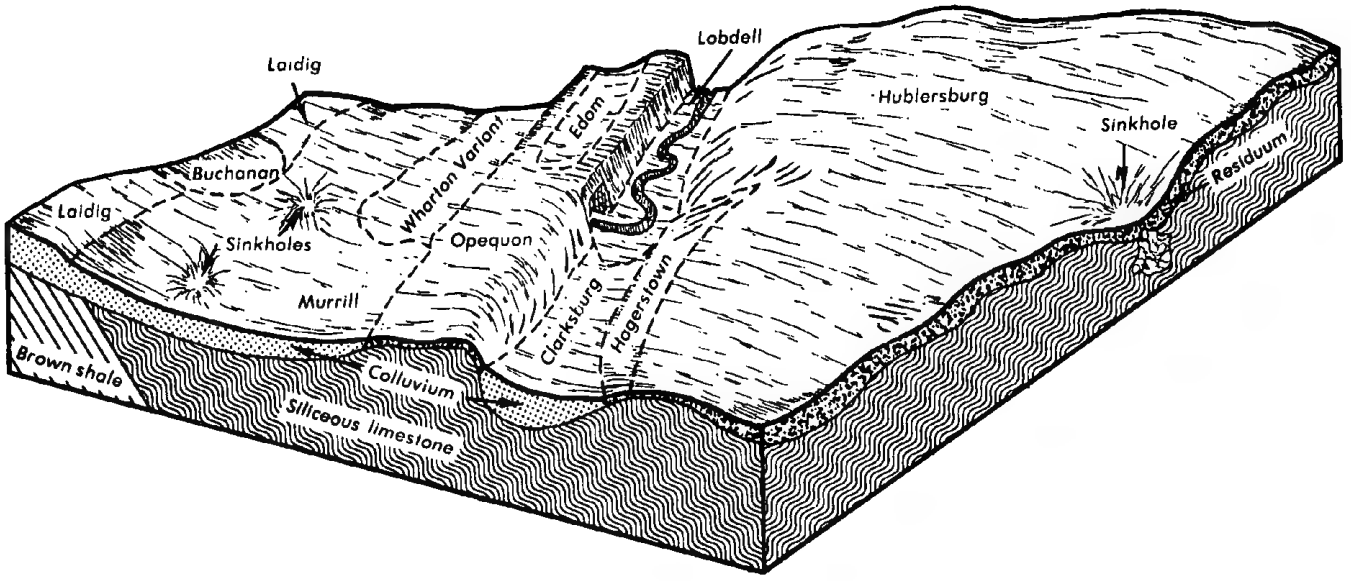


Figure 5.—Typical pattern of soils and underlying material in the Hublersburg-Murrill-Opequon association.

dissected hills and valleys. The association is about 18 percent Edom soils, 10 percent Opequon soils, 10 percent Morrison soils, and 62 percent soils of minor extent.

The Edom soils are deep. They formed in residuum on the tops and side slopes of hills and valleys.

The Opequon soils are shallow. They formed in residuum on ridges and hills.

The Morrison soils are deep. They formed in residuum on the tops and side slopes of ridges.

The minor soils on uplands include deep, well drained Vanderlip, Hublersburg, and Mertz soils; deep, moderately well drained Clarksburg soils; deep, moderately well drained and somewhat poorly drained Buchanan soils; deep, somewhat poorly drained Wharton Variant soils; and shallow, well drained Weikert soils. Deep, moderately well drained Lobdell soils are on flood plains.

This association is mostly in cropland. Most soils in the association have fair to good potential for farming. A heavy-textured surface layer, shallow depth to bedrock, slope, and a hazard of ground-water contamination from onsite septic systems are the main limitations for most uses.

7. Morrison association

Gently sloping to very steep, deep, well drained soils weathered from fine-grained calcareous sandstone and dolomitic limestone; on upland valley slopes

This association is at the center of limestone valleys in the central part of the county. The association covers about 5 percent of the county. The landscape consists of undulating to hilly valley sides dissected by drainageways. The association is about 69 percent Morrison soils and 31 percent soils of minor extent (fig. 6).

The Morrison soils formed in residuum on upper and lower side slopes of valleys.

The minor soils are on uplands. They include deep, well drained Laidig, Vanderlip, Hublersburg, and Murrill soils and deep, moderately well drained and somewhat poorly drained Buchanan soils.

Most areas of this association are wooded. Areas with few stones on the surface are in dairy farms, and a few are used for orchards. Some areas of the Vanderlip soils are a source of clay for pottery and bricks and of sand used in construction. The major limitations of the soils for most uses are slope, stones on the surface, and a hazard of ground-water contamination in areas used for onsite septic systems.

Areas dominated by soils formed in alluvial material

Most of these soils are deep and moderately well drained and somewhat poorly drained soils. Some of the soils are poorly drained.

8. Basher-Monongahela-Purdy association

Nearly level and gently sloping, deep, moderately well drained to poorly drained soils formed in alluvium from shale and sandstone; on flood plains and terraces

This association is mostly along the Little Juniata and Frankstown Branch of the Juniata River. The association covers about 4 percent of the county. The association is about 24 percent Basher soils, 13 percent Monongahela soils, 12 percent Purdy soils, and 51 percent minor soils.

The Basher soils are somewhat poorly drained. They formed in recent alluvium on flood plains. Basher soils have a seasonal high water table and are frequently to occasionally flooded, depending on the elevation of the area.

The Monongahela soils are moderately well drained and have a firm, brittle layer in the subsoil. The soils formed in old alluvium on terraces and have a seasonal high water table.

The Purdy soils are poorly drained. They formed in old alluvium on terraces and have a high water table.

The minor soils on flood plains include deep, well drained Linden soils and deep, poorly drained Holly soils. The minor soils on uplands are deep, well drained Edom soils; moderately deep, well drained Berks soils; deep, moderately well drained Ernest soils; and deep, poorly drained Brinkerton soils.

About half of this association is in urban development. The remaining part is farmed or wooded. The farmed areas are used mostly for vegetables or dairy products. The main limitations of the soils are the seasonal high water table, flooding, and moderately slow permeability.

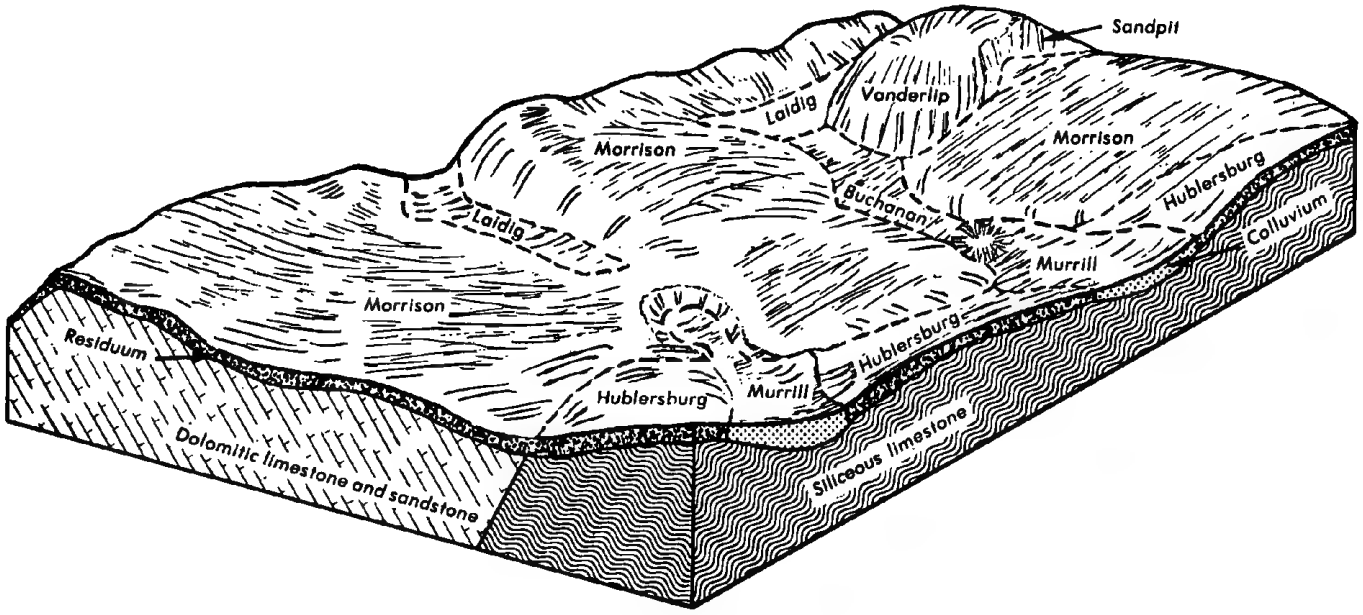


Figure 6.—Typical pattern of soils and underlying material in the Morrison association.

detailed soil map units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and management of the soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Buchanan gravelly silt loam, 3 to 8 percent slopes, is one of several phases in the Buchanan series.

Some map units are made up of two or more major soils. These map units are called soil complexes.

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Edom-Weikert complex, 3 to 8 percent slopes, is an example.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Quarries-Dumps complex is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

soil descriptions

AbB—Albrights gravelly silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and moderately well drained and somewhat poorly drained. It is on concave foot slopes, on benches, and in drainageways on mountains and ridges. Areas are irregular in shape and range from 2 to 30 acres.

Typically, the surface layer is dark brown, friable gravelly silt loam about 9 inches thick. The subsoil extends to a depth of 60 inches or more. It is reddish brown and yellowish red, friable gravelly silt loam and gravelly silty clay loam to a depth of 22 inches. At a depth of more than 22 inches it is reddish brown, very firm and brittle gravelly light silty clay loam.

Included with this soil in mapping are small areas of Meckesville, Leck Kill, Laidig, Buchanan, and Brinkerton soils. Included soils make up 10 to 15 percent of this unit.

The permeability of this Albrights soil is moderately slow, and the available water capacity is moderate. Runoff is medium, and the erosion hazard is moderate. A seasonal high water table at a depth of 6 to 36 inches and the firm part of the subsoil limit rooting depth. Unless limed, the soil is strongly acid and very strongly acid to a depth of about 20 inches and strongly acid and medium acid at a depth of more than 20 inches.

Most areas of this soil are farmed. A few small areas are used for community development or are in woodland.

The soil is suited to cultivated crops; however, in some years the seasonal high water table delays soil preparation and planting. Subsurface drainage improves suitability for row crops where suitable outlets are available. Management practices such as minimum tillage, stripcropping, using cover crops, and

incorporating crop residue into the soil help to control runoff and reduce erosion.

The soil is suited to pasture. Water-tolerant grasses and legumes are needed in undrained areas. Grazing when the soil is too wet causes surface compaction, increases runoff, and damages plant stands. Use of proper stocking rates, pasture rotation, and periodic applications of nutrients help to maintain pasture production.

This soil is suited to trees, and the potential for woodland is moderately high. The seasonal high water table interferes with the use of harvesting equipment during wet periods.

The seasonal high water table and moderately slow permeability limit the soil for most types of community development, especially for onsite waste disposal.

The capability subclass is IIe; woodland ordination symbol 3w.

AbC—Albrights gravelly silt loam, 8 to 15 percent slopes. This soil is sloping, deep, and moderately well drained and somewhat poorly drained. It is on concave foot slopes, on benches, and in drainageways on mountains and ridges. Areas are irregular in shape and range from 2 to 30 acres.

Typically, the surface layer is dark brown, friable gravelly silt loam about 7 inches thick. The subsoil extends to a depth of 60 inches or more. It is reddish brown and yellowish red, friable gravelly silt clay loam to a depth of 22 inches. At a depth of more than 22 inches it is reddish brown, very firm and brittle gravelly light silty clay loam.

Included with this soil in mapping are small areas of Meckesville, Leck Kill, Laidig, Buchanan, and Brinkerton soils. Included soils make up 10 to 15 percent of this unit.

The permeability of this Albrights soil is moderately slow, and the available water capacity is moderate. Runoff is moderately rapid, and the erosion hazard is severe. A seasonal high water table at a depth of 6 to 36 inches and the firm part of the subsoil limit rooting depth. Unless limed, the soil is strongly acid and very strongly acid to a depth of about 20 inches and strongly acid and medium acid at a depth of more than 20 inches.

Most areas of this soil are farmed. A few small areas are used for community development or are in woodland.

This soil is suited to cultivated crops; however, in some years the seasonal high water table delays soil preparation and planting. Subsurface drainage improves suitability for row crops where suitable outlets are available. Management practices such as minimum tillage, stripcropping, using cover crops and diversions, and incorporating crop residue into the soil help to control runoff and reduce erosion.

The soil is suited to pasture. Water-tolerant grasses and legumes are needed in undrained areas. Grazing when the soil is too wet causes surface compaction, increases runoff, and damages plant stands. Use of proper stocking rates, pasture rotation, and periodic applications of nutrients help to maintain production.

This soil is suited to trees, and the potential for woodland is moderately high. The seasonal high water table interferes with the use of harvesting equipment during wet periods.

The seasonal high water table and moderately slow permeability limit this soil for most types of community development, especially for onsite waste disposal.

The capability subclass is IIIe; woodland ordination symbol 3w.

AcB—Albrights very stony silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and moderately well drained and somewhat poorly drained. It is on concave foot slopes, on benches, and in drainageways on mountains. Areas are irregular in shape and range from 2 to 65 acres. Stones that are 10 to 36 inches in diameter cover 3 to 15 percent of the surface of the soil.

Typically, the surface layer is black, friable gravelly loam about 2 inches thick. The subsurface layer is reddish brown, friable gravelly silt loam about 3 inches thick. The subsoil extends to a depth of 60 inches or more. It is reddish brown and yellowish red, friable gravelly silt loam and gravelly silty clay loam to a depth of 22 inches. At a depth of more than 22 inches it is reddish brown, very firm and brittle gravelly light silty clay loam.

Included with this soil in mapping are small areas of Meckesville, Laidig, Brinkerton, and Buchanan soils. Included soils make up 10 to 20 percent of the unit.

The permeability of this Albrights soil is moderately slow, and the available water capacity is moderate. Runoff is medium. A seasonal high water table at a depth of 6 to 36 inches and the firm part of the subsoil limit the root zone. Unless limed, the soil is strongly acid and very strongly acid to a depth of about 20 inches and strongly acid and medium acid at a depth of more than 20 inches.

Most areas of this soil are wooded. A few small areas are used for community development.

The stones on the surface interfere with tillage and harvesting equipment and make the soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is moderately high. The seasonal high water table interferes with the use of timber harvesting equipment during wet periods.

The seasonal high water table, moderately slow permeability, and stones on the surface limit the soil for community development. The seasonal high water table and the moderately slow permeability especially limit the soil for onsite waste disposal.

The capability subclass is VIs; woodland ordination symbol 3w.

AcD—Albrights very stony silt loam, 8 to 25 percent slopes. This soil is sloping and moderately

steep, deep, and moderately well drained and somewhat poorly drained. It is on concave foot slopes, on benches, and in drainageways on mountains. Areas are irregular in shape and range from 2 to 300 acres. Stones that are 10 to 36 inches in diameter cover 3 to 15 percent of the surface of the soil.

Typically, the surface layer is black, friable gravelly loam about 2 inches thick. The subsurface layer is reddish brown, friable gravelly silt loam about 3 inches thick. The subsoil extends to a depth of 60 inches or more. It is reddish brown and yellowish red, friable gravelly silt loam and gravelly silty clay loam to a depth of 22 inches. At a depth of more than 22 inches it is reddish brown, very firm and brittle gravelly light silty clay loam.

Included with this soil in mapping are small areas of Meckesville, Laidig, Brinkerton, and Buchanan soils. Included soils make up 10 to 30 percent of the unit.

The permeability of this Albrights soil is moderately slow, and the available water capacity is moderate. Runoff is medium. A seasonal high water table at a depth of 6 to 36 inches and the firm part of the subsoil limit rooting depth. Unless limed, the soil is strongly acid and very strongly acid to a depth of about 20 inches and strongly acid and medium acid at a depth of more than 20 inches.

Most areas of this soil are wooded. A few small areas are used for community development.

The stones on the surface interfere with tillage and harvesting equipment and make this soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is moderately high. The seasonal high water table interferes with the use of timber harvesting equipment during wet periods.

Slope, the stones on the surface, the seasonal high water table, and the moderately slow permeability limit this soil for most types of community development. Slope, the seasonal high water table, and the moderately slow permeability especially limit the soil for onsite waste disposal and as a building site.

The capability subclass is VIs; woodland ordination symbol 3r.

AnB—Andover Variant loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and poorly drained. It is on concave mountain foot slopes. Areas are irregular in shape and range from 2 to 30 acres.

Typically, the surface layer is mottled, dark grayish brown, friable loam about 8 inches thick. The subsoil is 42 inches thick. It is mottled, light brownish gray and gray gravelly clay loam and gravelly sandy clay loam. It is friable in the upper 10 inches and very firm and brittle in the lower 32 inches. The substratum is mottled, gray gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Laidig, Buchanan, and Brinkerton soils. Included soils make up 5 to 15 percent of this unit.

The permeability of this Andover Variant soil is slow, and the available water capacity is moderate. Runoff is slow to medium, and the erosion hazard is moderate. Rooting depth is limited by a high water table that is between the surface and a depth of 6 inches and by the firm part of the subsoil. Unless limed, the soil is very strongly acid and strongly acid to a depth of about 20 inches and medium acid to neutral at a depth of more than 20 inches.

Most areas of this soil are farmed. A few small areas are used for community development or are in woodland.

The high water table in this soil prevents timely soil preparation and planting and makes the soil poorly suited to cultivated crops. Subsurface drainage improves the suitability for row crops where suitable outlets are available. Minimum tillage, stripcropping, using cover crops, and incorporating crop residue into the soil help to reduce runoff and control erosion.

This soil is suitable for pasture. Water-tolerant grasses and legumes are needed in undrained areas. Periodic applications of nutrients, pasture rotation, and deferred grazing during wet periods help to maintain desired plant species and prevent soil compaction.

This soil is suited to trees, and woodland potential is moderately high. The high water table interferes with the use of harvesting equipment during wet periods.

The high water table and slow permeability limit this soil for most types of community development, especially for onsite waste disposal and as a building site.

The capability subclass is IVw; woodland ordination symbol 3w.

AoB—Andover Variant extremely stony loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and poorly drained. It is on concave mountain foot slopes. Areas are irregular in shape and range from 2 to 8 acres. Stones that are 10 to 36 inches in diameter cover 15 to 50 percent of the surface of the soil.

Typically, the surface layer is very dark gray, friable loam about 3 inches thick. The subsurface layer is mottled, grayish brown, friable loam 5 inches thick. The subsoil is 42 inches thick. It is mottled, light brownish gray and gray gravelly clay loam and gravelly sandy clay loam that is friable in the upper 10 inches and firm and brittle in the lower 32 inches. The substratum is mottled, gray, firm gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Laidig, Buchanan, and Brinkerton soils. Included soils make up 10 to 20 percent of the unit.

The permeability of this Andover Variant soil is slow, and the available water capacity is moderate. Runoff is slow to medium. The rooting depth is limited by a high water table between the surface and a depth of 6 inches and by the firm part of the subsoil. Unless limed, the soil is very strongly acid and strongly acid to a depth of about 20 inches and medium acid to neutral at a depth of more than 20 inches.

Most areas of this soil are wooded. A few small areas are used for pasture or community development.

The stones on the surface limit the use of tillage, planting, and harvesting equipment and make the soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is moderately high. The high water table interferes with the use of timber harvesting equipment during wet periods.

The high water table, the slow permeability, and the stones on the surface limit the soil for community development, especially for onsite waste disposal.

The capability subclass is VIIs; woodland ordination symbol 3x.

Ba—Basher soils. This unit consists of nearly level, deep, moderately well drained and somewhat poorly drained soils on flood plains mainly along rivers. The surface layer is loam, silt loam, and fine sandy loam. Areas are irregular in shape and range from 2 to 125 acres.

Typically, the surface layer is dark brown, friable loam about 7 inches thick. The subsoil is 23 inches thick. It is strong brown, friable silt loam in the upper 5 inches; mottled, yellowish red, firm silt loam in the next 12 inches; and mottled, strong brown, firm loam in the lower 6 inches. The substratum is mottled reddish brown, firm and friable fine sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are small areas of Linden, Holly, and Monongahela soils. Included soils make up 5 to 15 percent of the unit.

The permeability of these Basher soils is moderate, and the available water capacity is high. Runoff is slow, and the erosion hazard is slight. The soils are occasionally flooded. They have a seasonal high water table at a depth of 6 to 24 inches that limits the root zone. Unless limed, the soils are very strongly acid to medium acid in the surface layer and subsoil and very strongly acid to slightly acid in the substratum.

Most areas of these soils are farmed. A few small areas are used for community development or are in woodland.

These soils are suited to cultivated crops; however, in some years the seasonal high water table and occasional flooding delay soil preparation and planting. Subsurface drainage improves the suitability for row crops where suitable outlets are available. Using cover crops and incorporating crop residue into the soil help to maintain organic matter content.

These soils are suited to pasture. Water-tolerant grasses and legumes are needed in undrained areas. Use of proper stocking rates, pasture rotation, deferment of grazing during the wet periods, and periodic applications of nutrients help to maintain tilth and growth of the desirable plant species.

The soils are suited to trees, and the potential for woodland is high. The seasonal high water table and flooding interfere with the use of harvesting equipment during some wet periods.

The seasonal high water table and flooding limit these soils for community development, especially for onsite waste disposal and as a building site.

The capability subclass is IIw; woodland ordination symbol 2o.

BeB—Bedington channery silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on slopes of ridges. Areas are irregular in shape and range from 2 to 50 acres.

Typically, the surface layer is dark grayish brown, very friable channery silt loam about 9 inches thick. The subsoil is 42 inches thick. It is brown, friable channery light silty clay loam in the upper 28 inches and yellowish red, firm very channery light silty clay loam in the lower 14 inches. The substratum is yellowish brown, firm very channery silt loam 12 inches thick. Shale bedrock is at a depth of 63 inches.

Included with this soil in mapping are small areas of Leck Kill, Berks, Weikert, Brinkerton, and Ernest soils. Also included are areas of a soil similar to this Bedington soil but that has a surface layer and subsoil less than 40 inches thick. Included soils make up 10 to 25 percent of the unit.

The permeability of this Bedington soil is moderate, and the available water capacity is moderate to high. Runoff is medium, and the erosion hazard is moderate. The root zone extends to a depth of more than 40 inches. Unless limed, the soil is very strongly acid to neutral to a depth of about 35 inches and very strongly acid and strongly acid at a depth of more than 35 inches.

Most areas of this soil are farmed. Some areas are in woodland, and a few small areas are used for community development.

This soil is suited to cultivated crops, but rock fragments in the soil interfere with tillage and planting in some areas. Stripcropping, minimum tillage, using cover crops, and incorporating crop residue into the soil help to control runoff and reduce erosion.

The soil is suited to pasture. Rotation of pastures and use of proper stocking rates help to maintain the desirable plant species.

This soil is suited to trees. The potential for woodland is high.

Areas of this soil with bedrock at a depth of less than 5 feet are limited for onsite waste disposal and excavations. The rock fragments in the soil hinder lawn preparation.

The capability subclass is IIe; woodland ordination symbol 2o.

BeC—Bedington channery silt loam, 8 to 15 percent slopes. This soil is sloping, deep, and well drained. It is on convex slopes of ridges. Areas are irregular in shape and range from 8 to 50 acres.

Typically, the surface layer is dark grayish brown, very friable channery silt loam about 9 inches thick. The

subsoil is 42 inches thick. It is brown, friable channery light silty clay loam in the upper 28 inches and yellowish red, firm very channery light silty clay loam in the lower 14 inches. The substratum is yellowish brown, firm very channery silt loam 12 inches thick. Shale bedrock is at a depth of 63 inches.

Included with this soil in mapping are small areas of Leck Kill, Berks, Weikert, Brinkerton, and Ernest soils. Also included are areas of a soil similar to this Bedington soil but that has a surface layer and subsoil less than 40 inches thick. Included soils make up 10 to 25 percent of the unit.

The permeability of this Bedington soil is moderate, and the available water capacity is moderate to high. Runoff is rapid, and the erosion hazard is severe. The root zone extends to a depth of more than 40 inches. Unless limed, the soil is very strongly acid to neutral to a depth of about 35 inches and very strongly acid and strongly acid at a depth of more than 35 inches.

Most areas of this soil are farmed. Some areas are wooded, and a few small areas are used for community development.

The soil is suited to cultivated crops, but rock fragments in the soil interfere with tillage and planting in some areas. Erosion is a major concern; stripcropping, minimum tillage, using cover crops, diversion terraces, and grassed waterways, and incorporating crop residue into the soil help to control runoff and reduce erosion.

This soil is suited to pasture. Rotation of pastures and use of proper stocking rates help to maintain good quality pastures.

The soil is suited to trees, and the potential for woodland is high.

Slope is the main limitation of this soil for community development, especially for onsite waste disposal and as a building site. Bedrock at a depth of less than 5 feet in some areas is an additional limitation for onsite waste disposal and building sites.

The capability subclass is IIIe; woodland ordination symbol 2o.

BdD—Bedington very stony silt loam, 8 to 25 percent slopes. This soil is sloping and moderately steep, deep, and well drained. It is on convex slopes of upland ridges. Areas are irregular in shape and range from 10 to 80 acres. Stones that are 10 to 36 inches in diameter cover 3 to 15 percent of the surface.

Typically, the surface layer is black, very friable channery silt loam about 1 inch thick. The subsurface layer is dark grayish brown, very friable channery silt loam about 6 inches thick. The subsoil is 44 inches thick. It is yellowish brown, friable shaly silt loam in the upper 4 inches; yellowish brown and strong brown, friable channery light silty clay loam in the middle 26 inches; and yellowish red, firm very channery light silty clay loam in the lower 14 inches. The substratum is yellowish brown, firm very channery silt loam 12 inches thick. Shale bedrock is at a depth of 63 inches.

Included with this soil in mapping are small areas of Leck Kill, Berks, Weikert, Brinkerton, and Ernest soils. Also included are a few areas of Bedington soils with slopes of less than 8 percent. Included soils make up 5 to 25 percent of the unit.

The permeability of this Bedington soil is moderate, and the available water capacity is moderate to high. Runoff is rapid. The root zone extends to a depth of more than 40 inches. The soil is very strongly acid to neutral to a depth of about 35 inches and very strongly acid and strongly acid at a depth of more than 35 inches.

Most areas of this soil are wooded. A few areas are used for community development.

The stones on the surface interfere with the use of tillage equipment and make the soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is high. Slope and the stones on the surface limit the use of timber harvesting equipment and hinder machine planting. Constructing access roads on the contour of the landscape helps to reduce erosion.

Slope and the stones on the surface also limit the soil for community development, especially for onsite waste disposal and as a site for buildings and roads.

The capability subclass is VIs; woodland ordination symbol 2r.

BkB—Berks channery silt loam, 3 to 8 percent slopes. This soil is gently sloping, moderately deep, and well drained. It is on the tops and side slopes of ridges. Areas are irregular in shape and range from 2 to 20 acres.

Typically, the surface layer is very dark gray, friable channery silt loam about 2 inches thick. The subsoil is brown, friable channery and shaly silt loam 23 inches thick. The substratum is yellowish brown, firm very shaly silt loam 4 inches thick. Shale bedrock is at a depth of 29 inches.

Included with this soil in mapping are small areas of Weikert, Blairton, and Bedington soils that make up 10 to 20 percent of the unit.

The permeability of this Berks soil is moderate to moderately rapid, and the available water capacity is moderate to low. Runoff is medium, and the erosion hazard is moderate. The root zone is restricted by bedrock at a depth of 20 to 40 inches. Unless limed, the soil is strongly acid and very strongly acid throughout.

Most areas of this soil are wooded. A few areas are farmed or used for community development.

This soil is suited to cultivated crops, but rock fragments in the soil interfere with tillage and planting. Stripcropping, minimum tillage, using cover crops, and incorporating crop residue into the soil help to control runoff and reduce erosion.

The soil is suited to pasture. Applying needed plant nutrients, rotation of pastures, and using proper stocking rates help to maintain good quality pastures.

This soil is suited to trees, and the potential for woodland is moderately high. Seedling mortality is a

major management concern. Rock fragments in the soil interfere with machine planting.

The depth to bedrock limits this soil for community development, especially for onsite waste disposal and excavations. The rock fragments limit lawns and landscaping.

The capability subclass is IIe; woodland ordination symbol 3f.

BkC—Berks channery silt loam, 8 to 15 percent slopes. This soil is sloping, moderately deep, and well drained. It is on the tops and side slopes of ridges. Areas are irregular in shape and range from 2 to 90 acres.

Typically, the surface layer is very dark gray, friable channery silt loam about 2 inches thick. The subsoil is brown, friable channery and shaly silt loam 23 inches thick. The substratum is yellowish brown, firm very shaly silt loam 4 inches thick. Shale bedrock is at a depth of 29 inches.

Included with this soil in mapping are small areas of Weikert, Blairton, Bedington, and Ernest soils. Included soils make up 10 to 20 percent of the unit.

The permeability of this Berks soil is moderate to moderately rapid, and the available water capacity is moderate to low. Runoff is rapid, and the erosion hazard is severe. The root zone is restricted by bedrock at a depth of 20 to 40 inches. Unless limed, the soil is strongly acid and very strongly acid.

Most areas of this soil are wooded. A few areas are farmed or used for community development.

This soil is suited to cultivated crops, but rock fragments in the soil interfere with tillage and planting. The severe erosion hazard is a major concern; stripcropping, minimum tillage, using cover crops, diversion terraces, and grassed waterways, and incorporating crop residue into the soil help to control runoff and reduce erosion.

The soil is suited to pasture. Rotation of pastures and use of proper stocking rates help to maintain good quality pastures.

This soil is suited to trees, and the potential for woodland is moderately high. Seedling mortality is a major management concern. Erosion can be reduced during harvesting by building roads on the contour of the landscape. Rock fragments in the soil interfere with machine planting on some areas.

The depth to bedrock limits this soil for community development, especially for onsite waste disposal and excavations. Rock fragments in the soil are a limitation for lawns and landscaping.

The capability subclass is IIIe; woodland ordination symbol 3f.

BkD—Berks channery silt loam, 15 to 25 percent slopes. This soil is moderately steep, moderately deep, and well drained. It is on side slopes of ridges. Areas range from 2 to 150 acres.

Typically, the surface layer is very dark gray, friable channery silt loam about 2 inches thick. The subsoil is brown, friable channery and shaly silt loam 23 inches thick. The substratum is yellowish brown, firm very shaly silt loam 4 inches thick. Shale bedrock is at a depth of 29 inches.

Included with this soil in mapping are small areas of Weikert, Laidig, Bedington, and Ernest soils that make up 10 to 20 percent of the unit.

The permeability of this Berks soil is moderate to moderately rapid, and the available water capacity is moderate to low. Runoff is rapid, and the erosion hazard is very severe. The root zone is restricted by bedrock at a depth of 20 to 40 inches. Unless limed, the soil is strongly acid and very strongly acid.

Most areas of this soil are wooded. A few areas are farmed or are used for community development.

The very severe erosion hazard, a low organic matter content, and the moderate to low available water capacity limit this soil for row crops. Using grasses and legumes and cover crops in the cropping system, stripcropping, minimum tillage, incorporating crop residue into the soil, and using diversion terraces and grassed waterways help to increase organic matter content, control runoff, and reduce erosion. Rock fragments in the soil interfere with seeding and planting in some areas.

This soil is suited to pasture. Rotation of pastures and use of proper stocking rates help to maintain good quality pastures.

The soil is suited to trees, and the potential for woodland is moderately high. Seedling mortality is a major management concern. The moderately steep slopes hinder operation of timber harvesting equipment and machine planting. Erosion can be reduced by constructing roads on the contour of the landscape.

Slope, the erosion hazard, the depth to bedrock, and the rock fragments in the soil are the main limitations for community development. Slope and the depth to bedrock especially limit the soil for onsite waste disposal and as a site for buildings and roads. Slope and the rock fragments are limitations for lawns and landscaping.

The capability subclass is IVe; woodland ordination symbol 3f.

BmC—Berks-Weikert channery silt loams, 8 to 15 percent slopes. This unit consists of sloping, well drained soils on ridges. The unit is about 50 percent moderately deep Berks soils, 35 percent shallow Weikert soils and 15 percent other soils. The Berks and Weikert soils are so intermingled that it was not practical to map them separately. Areas are irregular in shape and range from 5 to 500 acres.

Typically, the Berks soil has a surface layer of very dark gray, friable channery silt loam about 2 inches thick. The subsoil is brown, friable channery and shaly silt loam 23 inches thick. The substratum is yellowish brown, firm very shaly silt loam 4 inches thick. Shale bedrock is at a depth of 29 inches.

Typically, the Weikert soil has a surface layer of dark brown, friable channery silt loam about 2 inches thick. The subsoil is yellowish brown, friable channery and shaly silt loam 8 inches thick. The substratum is yellowish brown, friable very shaly silt loam 4 inches thick. Shale bedrock is at a depth of 14 inches.

Included with these soils in mapping are small areas of Bedington, Blairton, Ernest, and Brinkerton soils.

The permeability in the Berks soil is moderate to moderately rapid, and the available water capacity is moderate to low. Runoff is rapid, and the erosion hazard is severe. The root zone in the Berks soil is restricted by bedrock at a depth of 20 to 40 inches. Unless limed, the soil is strongly acid and very strongly acid.

The permeability in the Weikert soil is moderately rapid, and the available water capacity is very low. Runoff is rapid, and the erosion hazard is severe. The root zone in the Weikert soil is restricted by bedrock at a depth of 10 to 20 inches. Unless limed, the soil is very strongly acid and strongly acid.

Most areas of these soils are wooded. A few areas are farmed or are used for community development.

These soils are suited to cultivated crops, but rock fragments in the soil interfere with tillage and seeding. The severe erosion hazard is a major concern; stripcropping, minimum tillage, incorporating crop residue into the soil, and using diversion terraces and grassed waterways help to control runoff and reduce erosion.

The soils are suited to pasture. Rotation of pastures and use of proper stocking rate help to maintain good quality pastures.

These soils are suited to trees, and the potential for woodland is moderately high for the Berks soil and moderate for the Weikert soil. Seedling mortality is a major management concern.

The depth to bedrock, slope, and the rock fragments in the soil are the main limitations for community development. The depth to bedrock especially limits onsite waste disposal and excavations. The rock fragments limit lawns and landscaping.

The capability subclass is IVe; woodland ordination symbol 3f for the Berks part, 4d for the Weikert part.

BmD—Berks-Weikert channery silt loams, 15 to 25 percent slopes. This unit consists of moderately steep, well drained soils on the side slopes of ridges. The unit is about 45 percent moderately deep Berks soils, 40 percent shallow Weikert soils, and 15 percent other soils. The Berks and Weikert soils are so intermingled that it was not practical to map them separately. Areas are irregular in shape and range from 5 to 480 acres.

Typically, the Berks soil has a surface layer of very dark gray, friable channery silt loam about 2 inches thick. The subsoil is brown, friable channery and shaly silt loam 23 inches thick. The substratum is yellowish brown, firm very shaly silt loam 4 inches thick. Shale bedrock is at a depth of 29 inches.

Typically, the Weikert soil has a surface layer of dark brown, friable channery silt loam about 2 inches thick. The subsoil is yellowish brown, friable channery and shaly silt loam 8 inches thick. The substratum is yellowish brown, friable very shaly silt loam 4 inches thick. Shale bedrock is at a depth of 14 inches.

Included with these soils in mapping are small areas of Bedington, Blairton, Ernest, and Brinkerton soils.

The permeability in the Berks soil is moderate to moderately rapid, and the available water capacity is moderate to low. Runoff is rapid, and the erosion hazard is severe. The root zone in the Berks soil is restricted by bedrock at a depth of 20 to 40 inches. Unless limed, the soil is strongly and very strongly acid throughout.

The permeability in the Weikert soil is moderately rapid, and the available water capacity is very low. Runoff is very rapid, and the erosion hazard is severe. The root zone in the Weikert soil is restricted by bedrock at a depth of 10 to 20 inches. Unless limed, the soil is very strongly acid and strongly acid throughout.

Most areas of these soils are wooded. A few areas are farmed or used for community development.

The depth to bedrock, slope, and low available water capacity make these soils unsuitable for farming. The soils are suited to trees, however, and the potential for woodland is moderately high for the Berks soil and moderate for the Weikert soil. Seedling mortality is a major management concern, and slope limits equipment selection. Erosion can be reduced by constructing logging roads on the contour of the landscape.

The depth to bedrock, slope, and rock fragments in the soils are the main limitations for community development. Slope and the depth to bedrock especially limit the soils for onsite waste disposal and as a site for buildings and roads. Slope and the rock fragments limit lawns and landscaping.

The capability subclass is VIe; woodland ordination symbol 3f for Berks soil, 4d for Weikert soil.

BmF—Berks-Weikert channery silt loams, 25 to 70 percent slopes. This unit consists of steep, well drained soils on side slopes of ridges. The unit is about 50 percent moderately deep Berks soils, 40 percent shallow Weikert soils, and 10 percent other soils. The Berks and Weikert soils are so intermingled that it was not practical to map them separately. The areas are irregular in shape and range from 3 to 560 acres.

Typically, the Berks soil has a surface layer of very dark gray, friable channery silt loam about 2 inches thick. The subsoil is brown, friable channery and shaly silt loam 23 inches thick. The substratum is yellowish brown, firm very shaly silt loam 4 inches thick. Shale bedrock is at a depth of 29 inches.

Typically, the Weikert soil has a surface layer of dark brown, friable channery silt loam about 2 inches thick. The subsoil is yellowish brown, friable channery and shaly silt loam 8 inches thick. The substratum is yellowish brown, friable very shaly silt loam 4 inches thick. Shale bedrock is at a depth of 14 inches.

Included with these soils in mapping are small areas of Bedington, Gilpin, Laidig, and Ernest soils.

The permeability in the Berks soil is moderate to moderately rapid, and the available water capacity is moderate to low. Runoff is very rapid, and the erosion is very severe. The root zone in the Berks soil is restricted by bedrock at a depth of 20 to 40 inches. Unless limed, the soil is strongly acid and very strongly acid throughout.

The permeability in the Weikert soil is moderately rapid, and the available water capacity is very low. Runoff is very rapid, and the erosion hazard is very severe. The root zone in the Weikert soil is restricted by bedrock at a depth of 10 to 20 inches. Unless limed, the soil is very strongly acid and strongly acid throughout.

Slope makes these soils unsuitable for farming. The soils are suited to trees, however, and most areas are wooded. The potential for woodland is moderately high for the Berks soil and moderate for the Weikert soil. Slope limits the selection and use of timber harvesting and planting equipment. Erosion can be reduced by constructing access roads on the contour of the landscape.

Slope and the depth to bedrock limit these soils for most types of community development.

The capability subclass is VIIe; woodland ordination symbol 3f for the Berks part, 4d for the Weikert part.

BoB—Blairton silt loam, 3 to 8 percent slopes. This soil is gently sloping, somewhat poorly drained and moderately well drained, and moderately deep. It is on side slopes and at the heads of drainageways on ridges. Areas are irregular in shape and range from 2 to 80 acres.

Typically, the surface layer is dark grayish brown, friable silt loam about 4 inches thick. The subsoil is 30 inches thick. It is brown, friable silt loam that is shaly in the lower part. Shale bedrock is at a depth of 34 inches.

Included with this soil in mapping are small areas of Berks, Bedington, Weikert, Brinkerton, and Ernest soils. Included soils make up about 5 to 15 percent of the unit.

The permeability of this Blairton soil is moderately slow, and the available water capacity is moderate. Runoff is medium, and the erosion hazard is moderate. The root zone is restricted by a seasonal high water table at a depth of 12 to 30 inches. Unless limed, the soil is extremely acid to strongly acid throughout.

Most areas of this soil are wooded. A few areas are farmed or used for community development.

This soil is suited to cultivated crops, but the seasonal high water table delays timely tillage. Stripcropping, minimum tillage, using cover crops and grassed waterways, and incorporating crop residue into the soil help to control runoff and reduce erosion. Subsurface drainage improves suitability for row crops in areas where suitable outlets are available.

The soil is suited to pasture. Water-tolerant grasses and legumes are needed in undrained areas. Use of proper stocking rates, pasture rotation, and deferment of grazing during wet periods help to maintain tilth and desirable plant species.

This soil is suited to trees, and the potential for woodland is moderately high. The seasonal high water table interferes with the use of timber harvesting equipment during wet seasons.

The seasonal high water table and depth to bedrock limit this soil for community development. They especially limit the soil for onsite waste disposal and as a site for houses with basements. The depth to bedrock is a limitation for excavations.

The capability subclass is IIIw; woodland ordination symbol 3w.

BoC—Blairton silt loam, 8 to 15 percent slopes. This soil is sloping, somewhat poorly drained and moderately well drained, and moderately deep. It is on side slopes and at the heads of drainageways on ridges. Areas are irregular in shape and range from 2 to 75 acres.

Typically, the surface layer is dark grayish brown, friable silt loam about 4 inches thick. The subsoil is 30 inches thick. It is brown, friable silt loam that is shaly in the lower part. Shale bedrock is at a depth of 34 inches.

Included with this soil in mapping are small areas of Berks, Bedington, Weikert, and Ernest soils. Included soils make up about 5 to 20 percent of the unit.

The permeability of this Blairton soil is moderately slow, and the available water capacity is moderate. Runoff is rapid, and the erosion hazard is severe. The root zone is restricted by a seasonal high water table at a depth of 12 to 30 inches. Unless limed, the soil is extremely acid to strongly acid throughout.

Most areas of this soil are wooded. A few areas are farmed or used for community development.

This soil is suited to cultivated crops, but the seasonal high water table delays timely tillage and the severe erosion hazard is a major management concern. Stripcropping, minimum tillage, incorporating crop residue into the soil, and using grassed waterways, cover crops, and diversion terraces help to control runoff and reduce erosion. Subsurface drainage improves suitability for row crops in areas where suitable outlets are available.

This soil is suited to pasture. Water-tolerant grasses and legumes are needed in undrained areas. Use of proper stocking rates, pasture rotation, and deferment of grazing during wet periods help to maintain tilth and the desirable plant species.

The soil is suited to trees, and potential for woodland is moderately high. The seasonal high water table interferes with the use of timber harvesting equipment during wet seasons.

The seasonal high water table and the depth to bedrock limit this soil for community development. They especially limit the soil for onsite waste disposal and as a site for houses with basements. The depth to bedrock limits excavations.

The capability subclass is IIIe; woodland ordination symbol 3w.

BrB—Brinkerton silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and poorly drained. It is on the lower foot slopes, on benches, and in drainageways on ridges. Areas are irregular in shape and range from 2 to 50 acres.

Typically, the surface layer is dark grayish brown, friable heavy silt loam about 10 inches thick. The subsoil is 30 inches thick. It is mottled, gray silty clay loam that is friable in the upper 11 inches and very firm and brittle and shaly in the lower 19 inches. The substratum is mottled, olive brown, firm very shaly light silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Berks, Weikert, Bedington, Gilpin, and Ernest soils. Included soils make up 5 to 15 percent of the unit.

The permeability of this Brinkerton soil is slow, and the available water capacity is moderate. Runoff is medium, and the erosion hazard is moderate. The root zone is restricted by a high water table that is between the surface and a depth of 6 inches and by the firm part of the subsoil. In unlimed areas the soil is very strongly acid to medium acid to a depth of about 40 inches and strongly acid to slightly acid at a depth of more than 40 inches.

Most areas of this soil are farmed. A few areas are wooded or used for community development.

This soil is suited to cultivated crops, but the high water table interferes with timely tillage and planting. Subsurface drainage increases the suitability for some types of crops in areas where suitable outlets are available. Stripcropping, minimum tillage, and using cover crops help to control runoff and reduce erosion.

The soil is suited to pasture. Water-tolerant grasses and legumes are needed in undrained areas. Use of proper stocking rates, pasture rotation, and deferment of grazing during wet periods help to maintain tilth and desirable plant species.

This soil is suited to trees, and the potential for woodland is high. The high water table interferes with timber harvesting and maintenance operations during wet periods.

The high water table and slow permeability limit the soil for community development, especially for onsite waste disposal and as a site for houses with basements.

The capability subclass is IVw; woodland ordination symbol 2w.

BrC—Brinkerton silt loam, 8 to 15 percent slopes. This soil is sloping, deep, and poorly drained. It is on the lower foot slopes and in drainageways on ridges. Areas are irregular in shape and range from 2 to 25 acres.

Typically, the surface layer is dark grayish brown, friable heavy silt loam about 10 inches thick. The subsoil is 30 inches thick. It is mottled, gray silty clay loam that is friable in the upper 11 inches and very firm and brittle and shaly in the lower 19 inches. The substratum is mottled, olive brown, firm very shaly light silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Berks, Weikert, Bedington, Gilpin, and Ernest soils. Included soils make up 5 to 15 percent of the unit.

The permeability of this Brinkerton soil is slow, and the available water capacity is moderate. Runoff is rapid, and the erosion hazard is severe. The root zone is restricted by a high water table between the surface and a depth of 6 inches and by the firm part of the subsoil. In unlimed areas the soil is very strongly acid to medium acid to a depth of about 40 inches and strongly acid to slightly acid at a depth of more than 40 inches.

Most areas of this soil are farmed. A few areas are wooded or used for community development.

This soil is suited to cultivated crops, but the high water table interferes with timely tillage and planting. Subsurface drainage increases the suitability for some types of crops in areas where suitable outlets are available. The severe erosion hazard is a major concern; stripcropping, minimum tillage, using cover crops, incorporating crop residue into the soil, and using diversion terraces and grassed waterways help to control runoff and reduce erosion.

The soil is suited to pasture. Water-tolerant grasses and legumes are needed in undrained areas. Use of proper stocking rates, pasture rotation, and deferment of grazing during wet periods help to maintain tilth and desirable plant species.

This soil is suited to trees, and the potential for woodland is high. The high water table interferes with timber harvesting and maintenance operations during wet periods.

The high water table and slow permeability limit the soil for community development, especially for onsite waste disposal and as a site for houses with basements.

The capability subclass is IVw; woodland ordination symbol 2w.

BuB—Buchanan gravelly silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and moderately well drained and somewhat poorly drained. It is on lower mountain foot slopes. Areas are irregular in shape and range from 2 to 120 acres.

Typically, the surface layer is dark yellowish brown, friable gravelly silt loam about 10 inches thick. The subsoil is 36 inches thick. The upper 11 inches is brownish yellow, friable gravelly and channery clay loam. The lower 25 inches is very firm and brittle, mottled, yellowish brown channery clay loam. The substratum is mottled, strong brown, firm very channery clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Berks, Laidig, and Andover Variant soils. Also included are a few areas of a soil similar to this Buchanan soil but that is more alkaline in the subsoil and a few areas of Buchanan soils with a cobbly surface layer. Included soils make up 5 to 20 percent of the unit.

The permeability of this Buchanan soil is slow, and the available water capacity is moderate. Runoff is medium,

and the erosion hazard is moderate. The root zone is restricted by a seasonal high water table at a depth of 12 to 24 inches and by the firm part of the subsoil. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are farmed. A few areas are wooded or used for community development.

This soil is suited to cultivated crops, but the seasonal high water table interferes with timely tillage and planting, particularly on areas where the soil is somewhat poorly drained. Subsurface drainage helps improve the suitability for some types of crops in areas where suitable outlets are available. Stripcropping, minimum tillage, and using cover crops help to control runoff and reduce erosion.

This soil is suited to pasture. The seasonal high water table limits the growth of deep-rooted grasses and legumes in undrained areas. Grazing when the soil is too wet causes surface compaction, increases runoff, and damages plant stands. Use of proper stocking rates, pasture rotation, and deferment of grazing help to maintain tilth and desirable plant species.

The soil is suited to trees, and the potential for woodland is moderately high. The seasonal high water table interferes with timber harvesting during wet seasons, but large areas of this soil are suitable for machine planting.

The seasonal high water table and slow permeability limit this soil for community development, especially for onsite waste disposal and as a site for buildings with basements.

The capability subclass is IIe; woodland ordination symbol 3w.

BuC—Buchanan gravelly silt loam, 8 to 15 percent slopes. This soil is sloping, deep, and moderately well drained and somewhat poorly drained. It is on lower mountain foot slopes. Areas are irregular in shape and range from 2 to 115 acres.

Typically, the surface layer is dark yellowish brown, friable gravelly silt loam about 10 inches thick. The subsoil is 36 inches thick. The upper 11 inches is mottled, yellowish brown, friable gravelly and channery clay loam. The lower 25 inches is very firm and brittle, mottled, yellowish brown channery clay loam. The substratum is mottled, strong brown, firm very channery clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Berks, Laidig, and Andover Variant soils. Also included in the mapping are areas of a soil that is similar to this Buchanan soil but that is more alkaline in the subsoil and a few areas of Buchanan soils with a cobbly surface layer. Included soils make up 5 to 15 percent of the unit.

The permeability of this Buchanan soil is slow, and the available water capacity is moderate. Runoff is medium to rapid, and the hazard of erosion is severe. The root zone is restricted by a seasonal high water table at a depth of 12 to 24 inches and by the firm part of the subsoil. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are farmed. A few areas are wooded or used for community development.

This soil is suited to cultivated crops, but the seasonal high water table interferes with timely tillage and planting, particularly on areas where the soil is somewhat poorly drained. Subsurface drainage helps increase the suitability of the soil for some types of crops in areas where suitable outlets are available. The severe erosion hazard is a major concern; stripcropping, minimum tillage, using cover crops and grassed waterways, and incorporating crop residue into the soil help to control runoff and reduce erosion.

The soil is suited to pasture. Grazing when the soil is too wet causes surface compaction, increases runoff, and damages plant stands. Use of proper stocking rates, pasture rotation, and deferment of grazing during wet periods help to maintain tilth and pasture plant species.

This soil is suited to trees, and the potential for woodland is moderately high. The seasonal high water table interferes with timber harvesting in some areas during wet seasons.

The seasonal high water table and slow permeability limit the soil for community development, especially for onsite waste disposal and as a site for houses with basements.

The capability subclass is IIIe; woodland ordination symbol 3w.

BxB—Buchanan extremely stony silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and moderately well drained and somewhat poorly drained. It is on mountain foot slopes. Areas are irregular in shape and range from 2 to 120 acres. Stones that are 10 to 36 inches in diameter cover 15 to 50 percent of the surface.

Typically, the surface layer is very dark gray, friable silt loam about 1 inch thick. The subsurface layer is dark brown, friable gravelly silt loam 3 inches thick. The subsoil is 42 inches thick. It is brownish yellow, mottled, friable gravelly and channery clay loam in the upper 17 inches. The lower 25 inches is mottled, yellowish brown, very firm and brittle channery clay loam. The substratum is mottled, strong brown, firm very channery clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Berks, Laidig, Murrill, and Andover Variant soils. Also included are areas of a soil similar to this Buchanan soil but that is more alkaline in the subsoil and areas of soils where stones cover more than 50 percent of the surface. Included soils make up 5 to 20 percent of the unit.

The permeability of this Buchanan soil is slow, and the available water capacity is moderate. Runoff is medium. The root zone is limited by a seasonal high water table at a depth of 12 to 24 inches and by the firm part of the subsoil. In unlimed areas the soil is very strongly and strongly acid throughout.

Most areas of this soil are in woodland. A few areas are used for community development.

The stones on the surface make the use of most farming equipment impractical and make the soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is moderately high. The stones on the surface and the seasonal high water table limit the use of timber harvesting and maintenance equipment.

The stones on the surface, the seasonal high water table, and the slow permeability limit the soil for community development, especially for onsite waste disposal and as a site for houses and roads.

The capability subclass is VIIs; woodland ordination symbol 3x.

BxD—Buchanan extremely stony silt loam, 8 to 25 percent slopes. This soil is sloping and moderately steep, deep, and moderately well drained and somewhat poorly drained. It is on mountain foot slopes. Areas are irregular in shape and range from 2 to 300 acres. Stones that are 10 to 36 inches in diameter cover 15 to 50 percent of the surface.

Typically, the surface layer is very dark gray, friable silt loam about 1 inch thick. The subsurface layer is dark brown, friable gravelly silt loam 3 inches thick. The subsoil is 42 inches thick. It is brownish yellow, mottled, friable gravelly and channery clay loam in the upper 17 inches. The lower 25 inches is mottled, yellowish brown, very firm and brittle channery clay loam. The substratum is mottled, strong brown, firm very channery clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Berks, Laidig, Murrill, and Andover Variant soils. Also included are areas of a soil similar to this Buchanan soil but that is more alkaline in the subsoil and a few areas of soils where stones cover more than 50 percent of the surface. Included soils make up 5 to 20 percent of the unit.

The permeability of this Buchanan soil is slow, and the available water capacity is moderate. Runoff is rapid. The root zone is limited by a seasonal high water table at a depth of 12 to 24 inches and by the firm part of the subsoil. In unlimed areas the soil is very strongly and strongly acid throughout.

Most areas of this soil are in woodland. A few areas are used for community development.

The stones on the surface make the use of most types of farm equipment impractical and make the soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is moderately high. The stones on the surface and the seasonal high water table limit the use of timber harvesting and maintenance equipment.

The stones on the surface, the seasonal high water table, and the slow permeability limit the soil for community development, especially for onsite waste disposal and as a site for houses and roads.

The capability subclass is VIIs; woodland ordination symbol 3x.

CaB—Cavode silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and somewhat poorly drained. It is on the tops and side slopes of ridges and hills. Areas are irregular in shape and range from 2 to 60 acres.

Typically, the surface layer is dark brown, friable silt loam about 7 inches thick. The subsoil is 41 inches thick. It is mottled, yellowish brown, friable light silty clay loam and channery silty clay loam in the upper 19 inches and mottled, light brownish gray, firm channery and shaly silty clay loam in the lower 22 inches. The substratum is mottled, yellowish brown, firm shaly silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Gilpin and Wharton soils. Also included are areas of a soil similar to this Cavode soil but that is poorly drained. Included soils make up about 5 to 15 percent of the unit.

The permeability of this Cavode soil is slow, and the available water capacity is moderate. Runoff is medium, and the erosion hazard is moderate. The root zone is restricted by a seasonal high water table at a depth of 6 to 18 inches. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are wooded. A few areas are farmed or used for community development.

This soil is suited to cultivated crops, but the seasonal high water table interferes with timely tillage and planting. The slow permeability in the subsoil makes some areas difficult to drain. Stripcropping, minimum tillage, and using cover crops and grassed waterways help to control runoff and reduce erosion.

The soil is suited to pasture, especially to water-tolerant grasses and legumes. Grazing when the soil is too wet causes surface compaction, increases runoff, and damages plant stands. Use of proper stocking rates, pasture rotaiton, and deferment of grazing during wet periods help to maintain tilth and desirable plant species.

This soil is suited to trees, and the potential for woodland is high. The seasonal high water table interferes with timber harvesting and maintenance operations during wet periods.

The seasonal high water table and slow permeability limit this soil for community development, especially as a site for onsite waste disposal systems and buildings with basements.

The capability subclass is IIIw; woodland ordination symbol 2w.

CbB—Clarksburg silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and moderately well drained. It is at the base of steep slopes and in drainageways. Areas are irregular in shape and range from 2 to 70 acres.

Typically, the surface layer is brown, friable silt loam about 7 inches thick. The subsoil is 43 inches thick. It is yellowish brown, friable silty clay loam in the upper 13 inches and mottled, yellowish red, very firm and brittle shaly silty clay loam in the lower 30 inches. The

substratum is strong brown, firm silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Hublersburg, Edom, Mertz, Opequon, and Wharton Variant soils. Also included are areas of soils similar to this Clarksburg soil. Some of these similar soils have stone fragments in the surface layer and upper part of the subsoil; some are better drained; and some have a very firm layer in the subsoil that is not brittle and have neutral reaction. Included soils make up 5 to 20 percent of the unit.

The permeability of this Clarksburg soil is moderately slow to slow, and the available water capacity is moderate. Runoff is medium, and the erosion hazard is moderate. In unlimed areas this soil is strongly acid to slightly acid throughout. The root zone is restricted by a seasonal high water table at a depth of 18 to 36 inches and by the firm part of the subsoil.

Most areas of this soil are farmed. Some areas are used for community development or are in woodland.

This soil is suited to cultivated crops. Stripcropping, minimum tillage, using cover crops, and incorporating crop residue into the soil help to control runoff and reduce erosion.

The soil is suited to pasture, but the seasonal high water table restricts some deep-rooted legumes such as alfalfa. Use of proper stocking rates and pasture rotation help to maintain the desirable plant species.

This soil is suited to trees, and the potential for woodland is moderately high. The seasonal high water table interferes with the use of harvesting equipment briefly during wet seasons.

The seasonal high water table and the moderately slow to slow permeability limit this soil for community development, especially for onsite waste disposal and as a site for buildings with basements.

The capability subclass is IIe; woodland ordination symbol 3o.

CbC—Clarksburg silt loam, 8 to 15 percent slopes. This soil is sloping, deep, and moderately well drained. It is at the base of steep slopes and in drainageways. Areas are irregular in shape and range from 2 to 50 acres.

Typically, the surface layer is brown, friable silt loam about 7 inches thick. The subsoil is 43 inches thick. It is yellowish brown, friable silty clay loam in the upper 13 inches and mottled, yellowish red, very firm and brittle shaly silty clay loam in the lower 30 inches. The substratum is strong brown, firm silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Hublersburg, Edom, Mertz, Opequon, and Wharton Variant soils and areas of soils similar to this Clarksburg soil. Some of these similar soils have stone fragments in the surface layer and upper part of the subsoil; some are better drained; and some are neutral in reaction and have a very firm layer that is not brittle. Included soils make up 5 to 20 percent of the unit.

The permeability of this Clarksburg soil is moderately slow to slow, and the available water capacity is moderate. Runoff is rapid, and the erosion hazard is severe. In unlimed areas this soil is strongly acid to slightly acid throughout. The root zone is restricted by a seasonal high water table at a depth of 18 to 36 inches and by the firm part of the subsoil.

Most areas of this soil are farmed. Some areas are used for community development, and a few small areas are in woodland.

This soil is suited to cultivated crops. The severe erosion hazard is a major concern; stripcropping, minimum tillage, using cover crops, and incorporating crop residue into the soil help to control runoff and reduce erosion.

The soil is suited to pasture, but the seasonal high water table restricts some deep-rooted legumes such as alfalfa. Use of proper stocking rates and pasture rotation help to maintain the desirable plant species.

This soil is suited to trees, and the potential for woodland is moderately high. The seasonal high water table interferes with timber harvesting and maintenance operations briefly during very wet periods. Large areas are suitable for machine planting.

The seasonal high water table and moderately slow to slow permeability limit this soil for community development, especially for onsite waste disposal and as a site for buildings with basements.

The capability subclass is IIIe; woodland ordination symbol 3w.

CvB—Clymer loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on narrow to broad benches. Areas are irregular in shape and range from 2 to 70 acres.

Typically, the surface layer is black, friable loam about 3 inches thick. The subsurface layer is yellowish brown, friable loam about 1 inch thick. The subsoil is yellowish brown and brownish yellow, friable channery loam and channery clay loam 23 inches thick. The substratum is yellowish brown, very friable channery sandy loam 20 inches thick. Sandstone bedrock is at a depth of 47 inches.

Included with this soil in mapping are small areas of Hazleton, Laidig, Gilpin, and Leetonia soils. Also included are a few small areas of soils with slopes of more than 8 percent. Included soils make up 5 to 15 percent of the unit.

The permeability of this Clymer soil is moderate, and the available water capacity is moderate to high. Runoff is medium, and the erosion hazard is moderate. The root zone extends to a depth of 40 inches or more. In unlimed areas the soil is extremely acid to strongly acid throughout.

Most areas of this soil are wooded. A few areas are farmed or used for community development.

This soil is suited to cultivated crops. Stripcropping, minimum tillage, using cover crops, and incorporating

crop residue into the soil help to control runoff and reduce erosion.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain desirable plant species.

This soil is suited to trees, and the potential for woodland is high. Machine planting is practical on larger areas.

The depth to bedrock in this soil is a limitation for community development, especially for onsite waste disposal and excavations.

The capability subclass is IIe; woodland ordination symbol 2o.

CyB—Clymer very stony loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on narrow to broad benches. Areas are irregular in shape and range from 2 to 900 acres. Stones that are 10 to 36 inches in diameter cover 3 to 15 percent of the surface.

Typically, the surface layer is black, friable loam about 3 inches thick. The subsurface layer is brown, friable loam about 1 inch thick. The subsoil is yellowish brown and brownish yellow, friable channery loam and channery clay loam 23 inches thick. The substratum is yellowish brown, friable channery sandy loam 20 inches thick. Sandstone bedrock is at a depth of 47 inches.

Included with this soil in mapping are small areas of Hazleton, Laidig, Gilpin, and Leetonia soils. Also included are a few small areas where stones cover more than 15 percent of the surface. Included soils make up 5 to 25 percent of the unit.

The permeability of this Clymer soil is moderate, and the available water capacity is moderate to high. Runoff is medium. The root zone extends to a depth of 40 inches or more. In unlimed areas the soil is extremely acid to strongly acid throughout.

Most areas of this soil are in woodland. A few small areas have been strip mined or are used for community development.

The stones on the surface interfere with the use of most types of tillage equipment and make the soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is high. The stones on the surface restrict the use of equipment for timber harvesting and maintenance.

The depth to bedrock is the main limitation of this soil for community development. It especially limits the soil for onsite waste disposal, for excavations, and as a building site. Rock fragments in the soil limit lawns and landscaping.

The capability subclass is VIs; woodland ordination symbol 2o.

CyD—Clymer very stony loam, 8 to 25 percent slopes. This soil is sloping and moderately steep, deep, and well drained. It is on benches and side slopes. Areas are irregular in shape and range from 2 to 20 acres. Stones that are 10 to 36 inches in diameter cover 3 to 15 percent of the surface.

Typically, the surface layer is black, friable loam about 3 inches thick. The subsurface layer is brown, friable loam about 1 inch thick. The subsoil is yellowish brown and brownish yellow, friable channery loam and channery clay loam 23 inches thick. The substratum is yellowish brown, very friable channery sandy loam 20 inches thick. Sandstone bedrock is at a depth of 47 inches.

Included with this soil in mapping are small areas of Hazleton and Laidig soils. Also included are a few areas where stones cover more than 15 percent of the surface. Included soils make up 5 to 25 percent of the unit.

The permeability of this Clymer soil is moderate, and the available water capacity is moderate to high. Runoff is rapid. The root zone extends to a depth of 40 inches or more. In unlimed areas the soil is extremely acid to strongly acid throughout.

Most areas of this soil are in woodland. A few small areas have been strip mined or are used for community development.

Slope and the stones on the surface interfere with the use of most types of tillage equipment and make the soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is high. The stones on the surface restrict the use of equipment for timber harvesting and maintenance.

The main limitations of this soil for community development are slope, the stones on the surface, and the depth to bedrock. Slope and the depth to bedrock especially limit the soil for onsite waste disposal and as a building site. Slope and the stones on the surface limit lawns and landscaping.

The capability subclass is VIs; woodland ordination symbol 2r.

DR—Dystrochrepts-Rubble land complex. This unit consists of well drained and excessively drained, gently sloping to very steep soils. It is on mountain ridges and plateaus. The unit is about 50 percent Dystrochrepts, 30 percent Rubble land, and 20 percent other soils. Areas are irregular in shape and range from 3 to 600 acres. Stones that are 10 to 36 inches in diameter cover 50 percent to more than 90 percent of the surface.

Included with this unit in mapping are areas of Laidig, Hazleton, Meckesville, Buchanan, Lehew, and Leetonia soils.

The permeability of the Dystrochrepts is moderately rapid and rapid, and the available water capacity is low. Runoff is medium to rapid, and the erosion hazard is moderate to severe. The root zone is more than 40 inches deep. The soil is extremely acid to strongly acid throughout. The permeability, available water capacity, runoff, and most other characteristics of Rubble land are variable. The soil is extremely acid and very strongly acid throughout.

Areas of Dystrochrepts have a sparse canopy of poor-quality trees, mainly chestnut oak. The areas of Rubble land are mainly devoid of vegetation.

The stones on the surface and the location of these areas make them generally unsuitable for most uses other than recreation or wildlife habitat or as a source of building stone. Onsite investigation is needed to determine the suitability of the unit for most uses.

The capability subclass is VIIIs; this unit is not assigned a woodland ordination symbol.

EdB—Edom silty clay loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on narrow to broad side slopes and ridgetops. Areas are irregular in shape and range from 2 to 46 acres.

Typically, the surface layer is dark grayish brown, friable silty clay loam about 6 inches thick. The subsoil is dark brown and reddish brown, friable silty clay loam and silty clay 18 inches thick. The substratum is reddish brown, friable very shaly silty clay 18 inches thick. Limestone bedrock is at a depth of 42 inches.

Included with this soil in mapping are small areas of Clarksburg, Weikert, Opequon, and Wharton Variant soils. Included soils make up 5 to 15 percent of the unit.

The permeability of this Edom soil is moderately slow to moderate, and the available water capacity is moderate to high. Runoff is medium, and the erosion hazard is moderate. The root zone extends to a depth of 40 inches or more. In unlimed areas the soil is slightly acid and neutral throughout.

Most areas of this soil are farmed. A few areas are used for community development or are in woodland.

This soil is suited to cultivated crops. The surface layer of the soil is cloddy when tilled at a high moisture content; incorporating crop residue and manure into the soil and using crop rotations which include grasses and legumes help to improve tilth. Stripcropping, minimum tillage, and using cover crops help to control runoff and reduce erosion.

The soil is suited to pasture, but the surface layer becomes compacted if the soil is grazed when it is too wet. Use of proper stocking rates, pasture rotation, and deferment of grazing during wet periods help to maintain tilth.

This soil is suited to trees, and the potential for woodland is high.

The moderately slow to moderate permeability and the depth to bedrock limit this soil for community development, especially for onsite waste disposal. The depth to bedrock also limits excavations.

The capability subclass is IIe; woodland ordination symbol 2o.

EdC—Edom silty clay loam, 8 to 15 percent slopes. This soil is sloping, deep, and well drained. It is on narrow to broad side slopes and ridgetops. Areas are irregular in shape and range from 2 to 97 acres.

Typically, the surface layer is dark grayish brown, friable silty clay loam about 6 inches thick. The subsoil is dark brown and reddish brown, friable silty clay loam and silty clay 18 inches thick. The substratum is reddish brown, friable very shaly silty clay 18 inches thick. Limestone bedrock is at a depth of 42 inches.

Included with this soil in mapping are small areas of Clarksburg, Weikert, and Opequon soils. Included soils make up 5 to 15 percent of the unit.

The permeability of this Edom soil is moderately slow to moderate, and the available water capacity is moderate to high. Runoff is rapid, and the erosion hazard is severe. The root zone extends to a depth of 40 inches or more. In unlimed areas the soil is slightly acid and neutral throughout.

Most areas of this soil are farmed. A few areas are used for community development or are in woodland.

This soil is suited to cultivated crops. The severe erosion hazard is a major management concern; stripcropping, minimum tillage, using cover crops, incorporating crop residue into the soil, and using grassed waterways help to control runoff and reduce erosion. The surface layer becomes cloddy when tilled at a high moisture content. Increasing the organic matter content through applications of crop residue and manure and using crop rotations which include grasses and legumes help to improve soil tilth.

The soil is suited to pasture. The surface layer becomes compacted if the soil is grazed when it is too wet. Use of proper stocking rates, pasture rotation, and deferment of grazing during wet periods help to maintain tilth.

This soil is suited to trees, and the potential for woodland is high.

Slope, the moderate to moderately slow permeability, and the depth to bedrock are the main limitations of this soil for community development, especially for onsite waste disposal. The depth to bedrock also limits excavations.

The capability subclass is IIIe; woodland ordination symbol 2o.

EdD—Edom silty clay loam, 15 to 25 percent slopes. This soil is moderately steep, deep, and well drained. It is on narrow to moderately broad side slopes. Areas are irregular in shape and range from 2 to 62 acres.

Typically, the surface layer is dark grayish brown, friable silty clay loam about 6 inches thick. The subsoil is dark brown and reddish brown, friable silty clay loam and silty clay 18 inches thick. The substratum is reddish brown, friable very shaly silty clay 18 inches thick. Limestone bedrock is at a depth of 42 inches.

Included with this soil in mapping are small areas of Clarksburg, Weikert, and Opequon soils. Included soils make up 5 to 15 percent of the unit.

The permeability of this Edom soil is moderately slow to moderate, and the available water capacity is moderate. Runoff is rapid, and the erosion hazard is very severe. The root zone extends to a depth of 40 inches

or more. In unlimed areas the soil is slightly acid and neutral throughout.

Most areas of this soil are farmed. A few areas are used for community development or are wooded.

This soil is suited to cultivated crops. The very severe erosion hazard is a major management concern; stripcropping, minimum tillage, using cover crops, incorporating crop residue into the soil, and using grassed waterways and diversion terraces help to control runoff and reduce erosion. Increasing the organic matter content by using rotations that include grasses and legumes in the cropping system or by using crop residue and manure helps to improve tilth.

The soil is suited to pasture. Grazing when the soil is too wet causes surface compaction, increases runoff, and damages plant stands. Use of proper stocking rates, pasture rotation, and deferment of grazing during wet periods help to maintain soil tilth and desirable plant species.

Slope, the moderate to moderately slow permeability, and the depth to bedrock are the main limitations of this soil for community development, especially for onsite waste disposal. The depth to bedrock also limits excavations.

The capability subclass is IVe; woodland ordination symbol 2r.

EmB—Edom-Weikert complex, 3 to 8 percent slopes. This unit consists of gently sloping, well drained soils on upland ridges. The unit is about 50 percent deep Edom soils, 40 percent shallow Weikert soils, and 10 percent other soils. The Edom and Weikert soils are so intermingled that it was not practical to map them separately. Areas of the unit are irregular in shape and range from 2 to 50 acres.

Typically, the Edom soil has a surface layer of dark grayish brown, friable silty clay loam about 6 inches thick. The subsoil is dark brown and reddish brown, friable silty clay loam and silty clay 18 inches thick. The substratum is reddish brown, friable very shaly silty clay 18 inches thick. Limestone bedrock is at a depth of 42 inches.

Typically, the Weikert soil has a surface layer of dark brown, friable channery silt loam about 6 inches thick. The subsoil is yellowish brown, friable shaly silt loam 4 inches thick. The substratum is yellowish brown, friable very shaly silt loam 4 inches thick. Shale bedrock is at a depth of 14 inches.

Included with these soils in mapping are small areas of Clarksburg, Wharton Variant, and Opequon soils. Also included are areas of soils that have red shale bedrock at a depth of 10 to 20 inches.

The permeability of the Edom soil is moderately slow to moderate, and the available water capacity is moderate to high. Runoff is medium, and the erosion hazard is moderate. The root zone extends to a depth of 40 inches or more. In unlimed areas the soil is slightly acid and neutral throughout.

The permeability of the Weikert soil is moderately rapid, and the available water capacity is very low. Runoff is medium, and the erosion hazard is severe. The root zone is 10 to 20 inches thick. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Most areas of these soils are farmed. A few small areas are used for community development.

These soils are suited to cultivated crops. Stripcropping, minimum tillage, using cover crops, and incorporating crop residue into the soil help to control runoff and reduce erosion.

The soils are suited to pasture. Pasture rotation and deferred grazing during wet periods help to reduce plant damage and soil compaction.

These soils are suited to trees, and the potential for woodland is high for the Edom soils and moderate for the Weikert soils. Seedling mortality is a major management concern on the Weikert soils.

The depth to bedrock in these soils and the moderate to moderately slow permeability in the Edom soils are the main limitations for community development, especially for onsite waste disposal. The depth to bedrock also limits excavations.

The capability subclass is IIIe; woodland ordination symbol 2o for the Edom part, 4d for the Weikert part.

EmC—Edom-Weikert complex, 8 to 15 percent slopes. This unit consists of sloping, well drained soils on upland ridges. The unit is about 50 percent deep Edom soils, 40 percent shallow Weikert soils, and 10 percent other soils. The Edom and Weikert soils are so intermingled that it was not practical to map them separately. Areas of the unit are irregular in shape and range from 2 to 50 acres.

Typically, the Edom soil has a surface layer of dark grayish brown, friable silty clay loam about 6 inches thick. The subsoil is dark brown and reddish brown friable silty clay loam and silty clay 18 inches thick. The substratum is reddish brown, friable very shaly silty clay 18 inches thick. Limestone bedrock is at a depth of 42 inches.

Typically, the Weikert soil has a surface layer of dark brown, friable channery silt loam about 6 inches thick. The subsoil is yellowish brown, friable shaly silt loam 4 inches thick. The substratum is yellowish brown, friable very shaly silt loam 4 inches thick. Shale bedrock is at a depth of 14 inches.

Included with these soils in mapping are small areas of Clarksburg, Wharton Variant, and Opequon soils. Also included are areas of soils that have red shale bedrock at a depth of 10 to 20 inches.

The permeability of the Edom soil is moderately slow to moderate, and the available water capacity is moderate to high. Runoff is rapid, and the erosion hazard is severe. The root zone extends to a depth of 40 inches or more. In unlimed areas the soil is slightly acid and neutral throughout.

The permeability of the Weikert soil is moderately rapid, and the available water capacity is very low. Runoff is rapid, and the erosion hazard is very severe.

The root zone is 10 to 20 inches thick. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Most areas of these soils are farmed. A few small areas are used for community development.

These soils are suited to cultivated crops. The very severe erosion hazard is a major concern; stripcropping, minimum tillage, and using cover crops and grassed waterways help to control runoff and reduce erosion.

The soils are suited to pasture. Pasture rotation and deferred grazing during wet periods help to reduce plant damage and soil compaction.

These soils are suited to trees, and the potential for woodland is high for the Edom soils and moderate for the Weikert soils. Seedling mortality is a major management concern on the Weikert soils.

Slope and the depth to bedrock in these soils and the moderate to moderately slow permeability in the Edom soils are the main limitations for community development, especially for onsite waste disposal. The depth to bedrock also limits excavations.

The capability subclass is IVe; woodland ordination symbol 2o for the Edom part, 4d for the Weikert part.

EmD—Edom-Weikert complex, 15 to 25 percent slopes. This unit consists of moderately steep, well drained soils on upland ridges. The unit is about 50 percent deep Edom soils, 40 percent shallow Weikert soils, and 10 percent other soils. The Edom and Weikert soils are so intermingled that it was not practical to map them separately. Areas of the unit are irregular in shape and range from 2 to 85 acres.

Typically, the Edom soil has a surface layer of dark grayish brown, friable silty clay loam about 6 inches thick. The subsoil is dark brown and reddish brown, friable silty clay loam and silty clay 18 inches thick. The substratum is reddish brown, friable very shaly silty clay 18 inches thick. Limestone bedrock is at a depth of 42 inches.

Typically, the Weikert soil has a surface layer of dark brown, friable channery silt loam about 6 inches thick. The subsoil is yellowish brown, very friable shaly silt loam 4 inches thick. The substratum is yellowish brown, friable very shaly silt loam 4 inches thick. Shale bedrock is at a depth of 14 inches.

Included with these soils in mapping are small areas of Clarksburg, Wharton Variant, and Opequon soils. Also included are areas of soils that have red shale bedrock at a depth of 10 to 20 inches.

The permeability of the Edom soil is moderately slow to moderate, and the available water capacity is moderate to high. Runoff is rapid, and the erosion hazard is very severe. The root zone extends to a depth of 40 inches or more. In unlimed areas the soil is slightly acid and neutral throughout.

The permeability of the Weikert soil is moderately rapid, and the available water capacity is very low. Runoff is very rapid, and the erosion hazard is very severe. The root zone is 10 to 20 inches thick. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Most areas of these soils are used for pasture. A few areas are used for community development or are in woodland.

Slope makes these soils generally unsuitable for cultivated crops, but the soils are suited to pasture. Use of proper stocking rates, pasture rotation, and deferment of grazing during wet periods help to maintain tilth and desirable pasture plant species.

The soils are suited to trees, and the potential for woodland is high for the Edom soils and moderate for the Weikert soils. Slope restricts the use of timber harvesting and maintenance equipment. Seedling mortality is a major management concern on the Weikert soils.

The slope and depth to bedrock in these soils and the moderate to moderately slow permeability of the Edom soils are the main limitations for community development, especially for onsite waste disposal.

The capability subclass is VIe; woodland ordination symbol 2r for the Edom part, 4d for the Weikert part.

ErB—Ernest silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and moderately well drained. It is on foot slopes and in drainageways on ridges. Areas are irregular in shape and range from 2 to 110 acres.

Typically, the surface layer is dark grayish brown, friable silt loam about 9 inches thick. The subsoil is brown silty clay loam 39 inches thick. The upper part is friable, and the lower part is firm and brittle. The substratum is mottled, strong brown, firm silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Brinkerton, Berks, Weikert, Bedington, Gilpin, and Blairton soils. Also included are a few areas of a soil similar to this Ernest soil but that is somewhat poorly drained. Included soils make up 5 to 15 percent of the unit.

The permeability of this Ernest soil is moderately slow to slow, and the available water capacity is moderate. Runoff is medium, and the erosion hazard is moderate. The root zone is restricted by a seasonal high water table at a depth of 18 to 36 inches and by the firm part of the subsoil. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are farmed. A few areas are wooded or used for community development.

This soil is suited to cultivated crops, but subsurface drainage is needed in some areas. Stripcropping, minimum tillage, using cover crops, and incorporating crop residue into the soil help to control runoff and reduce erosion.

The soil is suited to pasture. The seasonal high water table affects the growth of some deep-rooted legumes. Use of proper stocking rates, pasture rotation, and periodic applications of plant nutrients help maintain desirable pasture plant species.

The soil is suited to trees, and the potential for woodland is high. The seasonal high water table delays harvesting during wet seasons. Machine planting is practical on large areas.

The seasonal high water table and moderately slow to slow permeability limit this soil for community development, especially for onsite waste disposal and as a building site.

The capability subclass is IIe; woodland ordination symbol 2w.

ErC—Ernest silt loam, 8 to 15 percent slopes. This soil is sloping, deep, and moderately well drained. It is on foot slopes of ridges. Areas are irregular in shape and range from 2 to 240 acres.

Typically, the surface layer is dark grayish brown, friable silt loam about 9 inches thick. The subsoil is brown silty clay loam 39 inches thick. It is friable in the upper part and firm and brittle in the lower part. The substratum is mottled, strong brown, firm silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Brinkerton, Berks, Weikert, Bedington, Gilpin, and Blairton soils. Also included are areas of a soil similar to this Ernest soil but that is somewhat poorly drained. Included soils make up 5 to 15 percent of the unit.

The permeability of this Ernest soil is moderately slow to slow, and the available water capacity is moderate. Runoff is rapid, and the erosion hazard is severe. The root zone is restricted by a seasonal high water table at a depth of 18 to 36 inches and by the firm part of the subsoil. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are farmed. A few areas are wooded or used for community development.

This soil is suited to cultivated crops. The severe erosion hazard and the seasonal high water table are the main management concerns. Subsurface drainage is needed in some areas to permit timely planting of crops. Stripcropping, minimum tillage, using cover crops, incorporating crop residue into the soil, and using grassed waterways help to control runoff and reduce erosion.

The soil is suited to pasture, but water-tolerant legumes are needed in undrained areas. Use of proper stocking rates, pasture rotation, and periodic applications of plant nutrients help to maintain desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is high. The seasonal high water table delays harvesting during wet seasons. Constructing access roads on the contour of the landscape helps to reduce erosion.

Slope, the seasonal high water table, and the moderately slow to slow permeability limit this soil for community development, especially for onsite waste disposal and as a building site.

The capability subclass is IIIe; woodland ordination symbol 2w.

GpB—Gilpin channery silt loam, 3 to 8 percent slopes. This soil is gently sloping, moderately deep, and well drained. It is on narrow to moderately broad side slopes of ridges. Areas are irregular in shape and range from 2 to 60 acres.

Typically, the surface layer is very dark grayish brown, friable channery silt loam about 9 inches thick. The subsoil is yellowish brown, friable channery and shaly light silty clay loam 16 inches thick. The substratum is yellowish brown, firm very shaly silt loam 6 inches thick. Shale bedrock is at a depth of 31 inches.

Included with this soil in mapping are small areas of Weikert, Cavode, and Wharton soils. Included soils make up 5 to 15 percent of the unit.

The permeability of this Gilpin soil is moderate, and the available water capacity is moderate. Runoff is medium, and the erosion hazard is moderate. Unless limed, the soil is very strongly acid and strongly acid throughout. The root zone is restricted by bedrock at a depth of 20 to 40 inches.

Most areas of this soil are near strip mines and are idle. A few small areas are farmed, wooded, or used for community development.

This soil is suited to cultivated crops, but rock fragments in the soil hinder some tillage and planting operations (fig. 7). Stripcropping, minimum tillage, using cover crops, and incorporating crop residue into the soil help to control runoff and reduce erosion.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is high. Machine planting is practical.

The depth to bedrock limits this soil for community development, especially for onsite waste disposal and excavations. Rock fragments in the soil hinder lawn seedbed preparation.

The capability subclass is IIe; woodland ordination symbol 2o.

GpC—Gilpin channery silt loam, 8 to 15 percent slopes. This soil is sloping, moderately deep, and well drained. It is on narrow to moderately broad side slopes of ridges. Areas are irregular in shape and range from 2 to 60 acres.

Typically, the surface layer is very dark grayish brown, friable channery silt loam about 9 inches thick. The subsoil is yellowish brown, friable channery and shaly light silty clay loam 16 inches thick. The substratum is yellowish brown, firm very shaly silt loam 6 inches thick. Shale bedrock is at a depth of 31 inches.

Included with this soil in mapping are small areas of Weikert, Cavode, and Wharton soils. Included soils make up 5 to 15 percent of the unit.

The permeability of this Gilpin soil is moderate and the available water capacity is moderate. Runoff is rapid, and the erosion hazard is severe. Unless limed, the soil is very strongly acid and strongly acid throughout. The

Figure 7.—The stone fragments in this area of Gilpin channery silt loam, 3 to 8 percent slopes, hinder tillage.

root zone is restricted by bedrock at a depth of 20 to 40 inches.

Most areas of this soil are near strip mines and are idle. A few small areas are farmed, wooded, or used for community development.

This soil is suited to cultivated crops, but rock fragments in the soil hinder some tillage and planting operations. The severe erosion hazard is the major management concern. Stripcropping, minimum tillage, using cover crops, incorporating crop residue into the soil, and using grassed waterways help to control runoff and reduce erosion.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is high. The soil is suitable for machine planting.

The depth to bedrock is the major limitation of the soil for community development, especially for onsite waste disposal and excavations. Slope and the rock fragments in the soil hinder the establishment of lawns and landscaping.

The capability subclass is IIIe; woodland ordination symbol 2o.

GpD—Gilpin channery silt loam, 15 to 25 percent slopes. This soil is moderately steep, moderately deep, and well drained. It is on narrow side slopes of ridges. Areas are irregular in shape and range from 2 to 60 acres.

Typically, the surface layer is very dark grayish brown, friable channery silt loam about 6 inches thick. The subsoil is yellowish brown, friable channery and shaly light silty clay 16 inches thick. The substratum is yellowish brown, firm very shaly silt loam 6 inches thick. Shale bedrock is at a depth of 28 inches.

Included with this soil in mapping are small areas of Weikert and Ernest soils. Included soils make up 5 to 15 percent of the unit.

The permeability of this Gilpin soil is moderate, and the available water capacity is moderate. Runoff is very

rapid, and the erosion hazard is very severe. Unless limed, the soil is very strongly acid and strongly acid throughout. The root zone is restricted by bedrock at a depth of 20 to 40 inches.

Most areas of this soil are near strip mines and are idle. A few small areas are farmed, wooded, or used for community development.

This soil is suited to cultivated crops, but rock fragments in the soil and slope hinder some tillage, planting, and harvesting operations. The very severe erosion hazard is a major management concern. Stripcropping, using minimum tillage and cover crops, incorporating crop residue into the soil, and using grassed waterways, diversion terraces, and crop rotations that include grasses and legumes help to control runoff and reduce erosion.

The soil is suited to pasture. The slope of the soil restricts some harvesting operations. Use of proper stocking rates and pasture rotation help to maintain desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is high. The slope and the severe erosion hazard are the major management concerns. Slope restricts the use of harvesting equipment, but erosion can be reduced by constructing access roads on the contour of the landscape.

Slope and the depth to bedrock limit this soil for community development, especially for onsite waste disposal, as a site for buildings and roads, and for landscaping.

The capability subclass is IVe; woodland ordination symbol 2r.

HeB—Hagerstown-Rock outcrop complex, 0 to 8 percent slopes. This unit is on valley floors and hills. It consists of areas of nearly level and gently sloping, deep, well drained soils and areas of exposed limestone bedrock. The unit is about 55 percent Hagerstown soils, 30 percent areas of exposed bedrock, and 15 percent other soils. The Hagerstown soils and exposed rock are so intermingled that it was not practical to map them separately. Areas of the unit are irregular in shape and range from 2 to 26 acres.

Typically, the surface layer of the Hagerstown soil is dark grayish brown, friable heavy silt loam about 8 inches thick. The subsoil is yellowish red and friable and is 52 inches thick. The upper part is silty clay and the lower part is silty clay loam. Limestone bedrock is at a depth of 60 inches.

Included with this unit in mapping are small areas of Hublersburg, Opequon, and Murrill soils. Also included are areas of Hagerstown soils with a surface layer of silty clay loam.

The permeability of the Hagerstown soil in this unit is moderate, and the available water capacity is high. Runoff is medium, and the erosion hazard is moderate. The root zone extends to a depth of 40 inches or more. Unless limed, the soil is very strongly acid and strongly acid to a depth of about 30 inches and strongly acid through neutral at a depth of more than 30 inches.

Most areas of this unit are used for pasture. A few areas are wooded or used for community development.

The areas of exposed rock interfere with the use of tillage, planting, and harvesting equipment and make the unit generally unsuitable for cultivated crops. The unit is suited to pasture, however. Use of proper stocking rates and pasture rotation help to maintain desirable pasture plant species.

The unit is suited to trees, and the potential for woodland is very high on the Hagerstown soils. The exposed rock interferes with the use of harvesting and planting equipment.

The exposed rock and the depth to bedrock are the main limitations of this unit for community development. They limit the unit for onsite waste disposal, for excavations, as a site for buildings and roads, and for landscaping. The unit is further limited for onsite waste disposal by a hazard of ground-water pollution.

The capability subclass is VIs; woodland ordination symbol 1c for the Hagerstown part, not assigned for the Rock outcrop part.

HeD—Hagerstown-Rock outcrop complex, 8 to 25 percent slopes. This unit is on valley floors and hills. It consists of sloping and moderately steep, deep, well drained soils and areas of exposed limestone bedrock. The unit is about 55 percent Hagerstown soils, 30 percent exposed bedrock, and 15 percent other soils. The Hagerstown soils and exposed rock are so intermingled that it was not practical to map them separately. Areas of the unit are irregular in shape and range from about 2 to 45 acres.

Typically, the surface layer of the Hagerstown soil is dark grayish brown, friable silt loam about 8 inches thick. The subsoil is 52 inches thick and is yellowish red and friable. It is silty clay in the upper part and silty clay loam in the lower part. Limestone bedrock is at a depth of 60 inches.

Included with these soils in mapping are small areas of Hublersburg, Murrill, and Opequon soils. Also included are areas of Hagerstown soils with a surface layer of silty clay loam.

The permeability of the Hagerstown soil in this unit is moderate, and the available water capacity is high. Runoff is medium to rapid, and the erosion hazard is severe. The root zone extends to a depth of 40 inches or more. Unless limed, the soil is very strongly acid and strongly acid to a depth of about 30 inches and strongly acid through neutral at a depth of more than 30 inches.

Most areas of this unit are used for pasture. A few small areas are wooded or used for community development.

The areas of exposed rock interfere with the use of tillage, planting, and harvesting equipment and make the unit generally unsuitable for cultivated crops. The unit is suited to pasture, however. Use of proper stocking rates

and pasture rotation help to maintain good quality pastures.

This complex is suited to trees, and the potential for woodland is very high on the Hagerstown soils. Slope and the areas of exposed rock limit the use of timber harvesting and planting equipment.

The exposed rock, slope, and the depth to bedrock are the main limitations of this unit for community development. They limit the unit for onsite waste disposal, for excavations, as a site for buildings and roads, and for landscaping. The unit is further limited for onsite waste disposal by a hazard of ground-water pollution.

The capability subclass is VIs; woodland ordination symbol 1c for the Hagerstown part, unassigned for the Rock outcrop part.

HgB—Hazleton channery sandy loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on narrow to broad benches on mountains. Areas are irregular in shape and range from 2 to 150 acres.

Typically, the surface layer is black, friable sandy loam about 2 inches thick. The subsurface layer is gray, friable channery sandy loam 4 inches thick. The subsoil is 43 inches thick. The upper 2 inches is dark reddish brown, firm loam. The lower 41 inches is strong brown, friable channery loam, very channery loam, and very channery sandy loam. The substratum is yellowish brown, firm very channery sandy loam to a depth of 60 inches.

Included with this soil in mapping are small areas of Clymer, Leetonia, and Laidig soils. Included soils make up 10 to 20 percent of the unit.

The permeability of this Hazleton soil is moderately rapid to rapid, and the available water capacity is moderate. Runoff is medium, and the erosion hazard is moderate. The root zone extends to a depth of 40 inches or more. In unlimed areas the soil is very strongly acid to extremely acid throughout.

Most areas of this soil are wooded. A few small areas are farmed or used for community development.

The soil is suited to cultivated crops, but rock fragments in the soil hinder the use of tillage and planting equipment. Stripcropping, minimum tillage, using cover crops, and incorporating plant residue into the soil help to control runoff and reduce erosion. The organic matter content of the soil is low, and using plant residue and manure increases the retention of moisture and nutrients.

This soil is suited to pasture. Pasture rotation and use of proper stocking rates help to maintain good quality pastures.

The soil is suited to trees, and the potential for woodland is moderately high.

The moderately rapid to rapid permeability of this soil is the main limitation for community development, especially for onsite sewage disposal. An additional limitation for community development is the depth to bedrock in areas of this soil where bedrock is at a depth of less than 5 feet.

The capability subclass is IIe; woodland ordination symbol 3o.

HgC—Hazleton channery sandy loam, 8 to 15 percent slopes. This soil is sloping, deep, and well drained. It is on narrow to broad benches and mountain side slopes. Areas are irregular in shape and range from 4 to 46 acres.

Typically, the surface layer is black, friable sandy loam about 2 inches thick. The subsurface layer is gray, friable channery sandy loam 4 inches thick. The subsoil is 43 inches thick. The upper 2 inches is dark reddish brown, firm loam. The lower 41 inches is strong brown, friable channery loam, very channery loam, and very channery sandy loam. The substratum is yellowish brown, firm very channery sandy loam to a depth of 60 inches.

Included with this soil in mapping are small areas of Clymer, Leetonia, Meckesville, and Laidig soils. Included soils make up 10 to 20 percent of the unit.

The permeability of this Hazleton soil is moderately rapid to rapid, and the available water capacity is moderate. Runoff is rapid, and the erosion hazard is severe. The root zone extends to a depth of 40 inches or more. In unlimed areas the soil is very strongly acid to extremely acid throughout.

Most areas of this soil are wooded. A few small areas are farmed or used for community development.

This soil is suited to cultivated crops, but rock fragments in the soil interfere with the operation of tillage and planting equipment. The severe erosion hazard is a major management concern. Stripcropping, minimum tillage, using cover crops, incorporating crop residue into the soil, and using grassed waterways help to control runoff and reduce erosion. The organic matter content of the soil is low, and using crop residue and manure help to increase retention of moisture and nutrients.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain good quality pastures.

This soil is suited to trees, and the potential for woodland is moderately high.

The moderately rapid to rapid permeability of this soil is the main limitation for community development, especially for onsite sewage disposal. An additional limitation for community development is the depth to bedrock in areas of this soil where bedrock is at a depth of less than 5 feet.

The capability subclass is IIIe; woodland ordination symbol 3o.

HhB—Hazleton very stony sandy loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on narrow to broad benches and mountain side slopes. Areas range from 2 to 300 acres. Stones that are 10 to 36 inches in diameter cover 3 to 15 percent of the surface.

Typically, the surface layer is black, friable sandy loam about 2 inches thick. The subsurface layer is gray, friable channery sandy loam 4 inches thick. The subsoil is 43 inches thick. The upper 2 inches is dark reddish brown, firm loam. The lower 41 inches is strong brown, friable channery loam, very channery loam, and very channery sandy loam. The substratum is yellowish brown, firm very channery sandy loam to a depth of 60 inches.

Included with this soil in mapping are small areas of Clymer, Leetonia, Meckesville, and Laidig soils. Also included are a few areas of Hazleton soils where stones cover more than 15 percent of the surface and a few areas of soils that have bedrock at a depth of less than 40 inches. Included soils make up 5 to 20 percent of the unit.

The permeability of this Hazleton soil is moderately rapid to rapid, and the available water capacity is moderate. Runoff is medium. The root zone extends to a depth of 40 inches or more. In unlimed areas the soil is very strongly acid and extremely acid throughout.

Most areas of this soil are in woodland. A few small areas have been strip mined, and a few are used for community development.

The stones on the surface interfere with the use of most types of tillage equipment and make the soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is moderately high.

The moderately rapid to rapid permeability of the soil and the stones on the surface are the main limitations for community development, especially for onsite sewage disposal. An additional limitation for community development is the depth to bedrock in areas of this soil where bedrock is at a depth of less than 5 feet. Rock fragments in the soil hinder landscaping and lawn seedbed preparation.

The capability subclass is VIs; woodland ordination symbol 3o.

HhC—Hazleton very stony sandy loam, 8 to 15 percent slopes. This soil is sloping and moderately steep, deep, and well drained. It is on narrow to broad benches and mountain side slopes. Areas range from 2 to 400 acres. Stones that are 10 to 36 inches in diameter cover 3 to 15 percent of the surface.

Typically, the surface layer is black, friable sandy loam about 2 inches thick. The subsurface layer is gray, friable channery sandy loam 4 inches thick. The subsoil is 43 inches thick. The upper 2 inches is dark reddish brown, firm loam. The lower 41 inches is strong brown, friable channery loam, very channery loam, and very channery sandy loam. The substratum is yellowish brown, firm very channery sandy loam to a depth of 60 inches.

Included with this soil in mapping are small areas of Clymer, Leetonia, Meckesville, and Laidig soils. Also included are a few areas of Hazleton soils where stones cover more than 15 percent of the surface and a few areas of soils that have bedrock at a depth of less than 40 inches. Included soils make up 5 to 20 percent of the unit.

The permeability of this Hazleton soil is moderately rapid to rapid, and the available water capacity is moderate. Runoff is rapid. The root zone extends to a depth of 40 inches or more. In unlimed areas the soil is extremely acid and very strongly acid throughout.

Most areas of this soil are in woodland. A few small areas have been strip mined, and a few are used for community development.

The stones on the surface interfere with the use of tillage equipment and make the soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is moderately high.

The stones on the surface, the moderately rapid to rapid permeability, and slope are the main limitations of this soil for community development. They especially limit the soil for onsite waste disposal, as a site for buildings and roads, and for landscaping. An additional limitation for community development is the depth to bedrock in areas of this soil where bedrock is at a depth of less than 5 feet.

The capability subclass is VIs; woodland ordination symbol 3o.

HhF—Hazleton very stony sandy loam, 25 to 70 percent slopes. This soil is steep and very steep, deep, and well drained. It is on mountain side slopes. Areas are irregular in shape and range from 2 to 1,200 acres. Stones that are 10 to 36 inches in diameter cover 3 to 15 percent of the surface.

Typically, the surface layer is black, friable sandy loam about 2 inches thick. The subsurface is gray, friable channery sandy loam 4 inches thick. The subsoil is 43 inches thick. The upper 2 inches is dark reddish brown, firm loam. The lower 41 inches is strong brown, friable channery loam, very channery loam, and very channery sandy loam. The substratum is yellowish brown, firm very channery sandy loam to a depth of 60 inches.

Included with this soil in mapping are small areas of Clymer, Berks, Meckesville, and Laidig soils. Also included are areas of Hazleton soils where stones cover more than 15 percent of the surface, a few areas of soils that have bedrock at a depth of less than 40 inches, and a few areas of exposed bedrock. Included areas make up 5 to 25 percent of the unit.

The permeability of this Hazleton soil is moderately rapid to rapid, and the available water capacity is moderate. Runoff is very rapid. The root zone extends to a depth of 40 inches or more. In unlimed areas the soil is extremely acid to very strongly acid throughout.

Most areas of this soil are in woodland. A few areas are used for community development.

Slope and the stones on the surface make the soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is moderately high. Slope limits the use of timber harvesting equipment. Constructing harvesting roads on the contour helps to reduce erosion.

Slope, the stones on the surface, and the moderately rapid to rapid permeability limit this soil for most types of community development.

The capability subclass is VIIs; woodland ordination symbol 3r.

Ho—Holly silt loam. This soil is nearly level, deep, and poorly drained. It is on narrow to broad flood plains throughout the county. Areas are irregular in shape and range from 2 to 100 acres.

Typically, the surface layer is dark gray, friable silt loam about 6 inches thick. The subsoil is 23 inches thick. It is mottled, dark gray, friable silt loam in the upper 4 inches and mottled, gray, friable silty clay loam in the lower 19 inches. The substratum extends to a depth of 60 inches or more. It is mottled, gray, friable sandy loam and loam to a depth of 43 inches and gray, firm cobbly silty clay loam at a depth of more than 43 inches.

Included with this soil in mapping are small areas of Linden, Basher, Lobdell, Hublersburg, Opequon, Murrill, Andover Variant, Berks, and Buchanan soils. Also included are areas of a soil similar to this Holly soil but that has a surface layer of sandy loam. Included soils make up 5 to 25 percent of the unit.

The permeability of this Holly soil is moderate to moderately slow, and the available water capacity is high. The soil has a high water table between the surface and a depth of 6 inches, and the areas are frequently flooded. Runoff is slow; water is ponded on the surface of some areas. In unlimed areas the soil is slightly acid to neutral throughout.

Most areas of this soil are farmed. A few areas are wooded.

This soil is suited to cultivated crops, but the high water table and flooding prevent timely soil preparation and planting. Subsurface drainage helps to increase the suitability for crops where suitable outlets are available. Using cover crops and incorporating crop residue into the soil help to maintain organic matter content.

The soil is suited to pasture. Water-tolerant grasses and legumes are needed in undrained areas. Grazing when the soil is too wet causes surface compaction and damages plant stands. Use of proper stocking rates, pasture rotation, and deferment of grazing during wet periods help to maintain tilth and desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is high. Flooding and the high water table interfere with harvesting.

Flooding and the high water table are also the main limitations of the soil for community development, especially for onsite waste disposal and as a site for buildings and roads.

The capability subclass is IVw; woodland ordination symbol 2w.

HuB—Hublersburg cherty silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on uplands. Areas are irregular in shape and range from 2 to 1,300 acres.

Typically, the surface layer is dark brown, friable cherty silt loam about 10 inches thick. The subsoil extends to a depth of 60 inches or more. It is yellowish red, friable cherty silty clay loam, silty clay, and cherty silty clay to a depth of 35 inches. At a depth of more than 35 inches it is yellowish red, friable silty clay loam.

Included with this soil in mapping are small areas of Opequon, Mertz, Clarksburg, Morrison, and Wharton Variant soils. Also included are a few areas of Hublersburg soils that have stone fragments in the surface layer. Included soils make up 5 to 10 percent of the unit.

The permeability of this Hublersburg soil is moderate, and the available water capacity is high. Surface runoff is medium, and the erosion hazard is moderate. The root zone is more than 40 inches thick. Unless limed, the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are farmed (fig. 8). A few small areas are wooded or used for community development.

This soil is well suited to cultivated crops. The moderate erosion hazard is the main management concern; stripcropping, minimum tillage, and using cover crops and grassed waterways help to control runoff and reduce erosion. Incorporating crop residue and manure into the soil help to maintain organic matter content and improve tilth.

The soil is well suited to pasture. Use of proper stocking rates and pasture rotation help to maintain desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is high. Machine planting is practical on larger areas.

The main limitation of this soil for community development is a hazard of ground-water pollution in areas used for onsite waste disposal.

The capability subclass is IIe; woodland ordination symbol 2o.

HuC—Hublersburg cherty silt loam, 8 to 15 percent slopes. This soil is sloping, deep, and well drained. It is on uplands. Areas are irregular in shape and range from 3 to 450 acres.

Typically, the surface layer is dark brown, friable cherty silt loam about 10 inches thick. The subsoil extends to a depth of 60 inches or more. It is yellowish red, friable cherty silty clay loam, silty clay, and cherty silty clay to a depth of 35 inches. At a depth of more than 35 inches it is yellowish red, friable silty clay loam.

Included with this soil in mapping are small areas of Opequon, Mertz, Clarksburg, Morrison, and Wharton Variant soils. Also included are a few areas of Hublersburg soils that have stone fragments in the surface layer. Included soils make up 5 to 10 percent of the unit.

Figure 8.—A field of alfalfa on Hublersburg cherty silt loam, 3 to 8 percent slopes.

The permeability of this Hublersburg soil is moderate, and the available water capacity is high. Surface runoff is rapid, and the erosion hazard is severe. The root zone is more than 40 inches thick. Unless limed, the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are farmed. A few small areas are wooded or used for community development.

This soil is suited to cultivated crops. Stripcropping, minimum tillage, and using cover crops, grassed waterways, and diversions help to reduce runoff and control the severe erosion hazard. Incorporating crop residue and manure into the soil increases the organic matter content and helps to maintain tilth.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is high. Machine planting is practical on larger areas.

Slope limits this soil for some types of community development, especially for onsite waste disposal. A hazard of ground-water pollution is an additional limitation for onsite waste disposal.

The capability subclass is IIIe; woodland ordination symbol 2o.

HxB2—Hublersburg cherty silty clay loam, 3 to 8 percent slopes, eroded. This soil is gently sloping, deep, and well drained. It is on uplands. Much of the surface layer of the soil has been eroded. Areas are irregular in shape and range from 2 to 240 acres.

Typically, the surface layer is strong brown, friable cherty silty clay loam about 6 inches thick. The subsoil extends to a depth of 60 inches or more. It is yellowish red, friable cherty silty clay loam, silty clay, and cherty silty clay to a depth of 33 inches. At a depth of more than 33 inches it is yellowish red, friable silty clay loam.

Included with this soil in mapping are small areas of Opequon, Mertz, Clarksburg, Morrison, and Wharton Variant soils. Also included are a few areas of Hublersburg soils that have stone fragments in the surface layer. Included soils make up 5 to 10 percent of the unit.

The permeability of this Hublersburg soil is moderate, and the available water capacity is high. Surface runoff is medium, and the erosion hazard is severe. The root zone extends to a depth of 60 inches or more. Unless limed, the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are farmed. A few small areas are wooded or used for community development.

The soil is suited to cultivated crops, but the surface layer is commonly cloddy and crusty, which hinders seedbed preparation and seedling development. Using green-manure crops and grasses and legumes in the cropping system and incorporating manure into the soil help to increase the organic matter content of the soil and improve the tilth of the plow layer. Stripcropping,

minimum tillage, and using cover crops help to control runoff and reduce erosion. Rock fragments in some areas of the soil interfere with planting and harvesting.

This soil is suited to pasture. Use of proper stocking rates and pasture rotations help to maintain desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is high.

The main limitation of the soil for community development is a hazard of ground-water pollution in areas used for onsite waste disposal.

The capability subclass is IIIe; woodland ordination symbol 2o.

HxC2—Hublersburg cherty silty clay loam, 8 to 15 percent slopes, eroded. This soil is sloping, deep, and well drained. It is on uplands. Much of the surface layer of the soil has been eroded. Areas are irregular in shape and range from about 2 to 290 acres.

Typically, the surface layer is strong brown, friable cherty silty clay loam about 8 inches thick. The subsoil extends to a depth of 60 inches or more. It is yellowish red, friable silty clay loam, silty clay, and cherty silty clay to a depth of 33 inches. At a depth below 33 inches it is yellowish red, friable silty clay loam.

Included with this soil in mapping are small areas of Opequon, Mertz, Clarksburg, Morrison, and Wharton Variant soils. Also included are a few areas of Hublersburg soils that have stone fragments in the surface layer. Included soils make up 5 to 10 percent of the unit.

The permeability of this Hublersburg soil is moderate, and the available water capacity is high. Surface runoff is rapid, and the erosion hazard is severe. The root zone is 60 inches thick or more. Unless limed, the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are farmed. A few small areas are wooded or used for community development.

The soil is suited to cultivated crops, but the surface layer is commonly cloddy and crusty, which hinders seedbed preparation and seedling development. Using green-manure crops and grasses and legumes in the cropping system and incorporating animal manure into the soil help to increase the organic matter content of the soil and improve the tilth of the plow layer. Stripcropping, minimum tillage, and using cover crops help to control runoff and reduce erosion. Rock fragments in some areas of the soil interfere with planting and harvesting.

The soil is suited to pasture. Grazing when the soil is too wet causes surface compaction, increases runoff, and reduces the desirable pasture plant species. Use of proper stocking rates, pasture rotation, and deferment of grazing during wet periods help to improve and maintain tilth and increase the desirable pasture plants.

This soil is suited to trees, and the potential for woodland is high. Machine planting is practical on larger areas.

Slope is the main limitation of this soil for community development. Use of the soil for onsite waste disposal is limited by a hazard of ground-water pollution.

The capability subclass is IVe; woodland ordination symbol 2o.

HxD2—Hublersburg cherty silty clay loam, 15 to 25 percent slopes, eroded. This soil is moderately steep, deep, and well drained. It is on uplands. Much of the surface layer of the soil has been eroded. Areas are irregular in shape and range from about 2 to 142 acres.

Typically, the surface layer is strong brown, friable cherty silty clay loam about 6 inches thick. The subsoil extends to a depth of 60 inches or more. It is yellowish red, friable cherty silty clay loam, silty clay, and cherty silty clay to a depth of 31 inches. Below a depth of 31 inches it is yellowish red, friable silty clay loam.

Included with this soil in mapping are small areas of Opequon, Mertz, Clarksburg, Morrison, and Wharton Variant soils. Also included are a few areas of Hublersburg soils that have stone fragments in the surface layer and a few areas of exposed bedrock. Included areas make up 5 to 10 percent of the unit.

The permeability of this Hublersburg soil is moderate, and the available water capacity is high. Surface runoff is very rapid, and the erosion hazard is severe. The root zone is 60 inches thick or more. Unless limed, the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are in pasture. A few areas are wooded or used for community development.

Slope and the severe erosion hazard make this soil generally unsuitable for cultivated crops. The soil is suited to pasture, but grazing when the soil is too wet causes surface compaction, excessive runoff, and poor tilth. Use of proper stocking rates, pasture rotation, and deferment of grazing during wet periods help to maintain tilth and desirable pasture plants.

This soil is suited to trees, and the potential for woodland is high. The slope limits the use of planting and timber harvesting equipment. Constructing access roads on the contour of the landscape helps to reduce erosion.

Slope is the main limitation of the soil for community development, especially for onsite waste disposal and as a site for homes.

The capability subclass is VIe; woodland ordination symbol 2r.

LaB—Laidig channery loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on lower mountain slopes. Areas are irregular in shape and range from 2 to 100 acres.

Typically, the surface layer is brown, friable channery loam about 8 inches thick. The subsoil extends to a depth of 60 inches or more. It is yellowish brown, friable channery silt loam to a depth of 20 inches; strong brown, firm channery heavy loam between depths of 20 and 32 inches; and strong brown, very firm and brittle channery heavy loam below a depth of 32 inches.

Included with this soil in mapping are small areas of Berks, Murrill, and Buchanan soils. Included soils make up 5 to 15 percent of the unit.

The permeability of this Laidig soil is moderately slow, and the available water capacity is moderate. Runoff is medium, and the erosion hazard is moderate. The rooting depth is restricted by a seasonal high water table at a depth of 36 to 48 inches and by the very firm and brittle part of the subsoil. Unless limed, the soil is extremely acid to strongly acid throughout.

Most areas of this soil are farmed. A few areas are wooded or used for community development.

This soil is suited to cultivated crops. Stripcropping, minimum tillage, using cover crops, and incorporating crop residue into the soil help to control runoff and reduce erosion.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain desirable pasture plants.

The soil is suited to trees, and the potential for woodland is moderately high.

The moderately slow permeability and seasonal water table limit this soil for community development, especially for onsite waste disposal and as a site for buildings with basements. Rock fragments in the soil hinder lawn seedbed preparation.

The capability subclass is IIe; woodland ordination symbol 3o.

LaC—Laidig channery loam, 8 to 15 percent slopes. This soil is sloping, deep, and well drained. It is on lower mountain slopes. Areas are irregular in shape and range from 2 to 173 acres.

Typically, the surface layer is brown, friable channery loam about 7 inches thick. The subsoil extends to a depth of 60 inches or more. It is yellowish brown, friable channery silt loam to a depth of 20 inches; strong brown, firm channery heavy loam between depths of 20 and 32 inches; and strong brown very firm and brittle channery heavy loam at a depth of more than 32 inches.

Included with this soil in mapping are small areas of Berks, Murrill, and Buchanan soils. Included soils make up 5 to 15 percent of the unit.

The permeability of this Laidig soil is moderately slow, and the available water capacity is moderate. Runoff is rapid, and the erosion hazard is severe. The rooting depth is restricted by a seasonal high water table at a depth of 36 to 48 inches and by the very firm and brittle part of the subsoil. Unless limed, the soil is extremely acid to strongly acid throughout.

Most areas of this soil are farmed. A few small areas are wooded or used for community development.

This soil is suited to cultivated crops. The severe erosion hazard is a major management concern; stripcropping, minimum tillage, using cover crops, incorporating crop residue into the soil, and using diversion terraces and grassed waterways help to control runoff and reduce erosion. The organic matter content of the soil is low and can be improved by incorporation of plant residue and manure into the soil.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain desirable pasture plants.

This soil is suited to trees, and the potential for woodland is moderately high.

The moderately slow permeability, the seasonal high water table, and slope are the main limitations of the soil for community development, especially for onsite waste disposal and as a site for buildings with basements. Slope and rock fragments in some areas hinder the establishment of lawns and landscaping.

The capability subclass is IIIe; woodland ordination symbol 3o.

LaD—Laidig channery loam, 15 to 25 percent slopes. This soil is moderately steep, deep, and well drained. It is on lower mountain slopes. Areas are irregular in shape and range from 3 to 90 acres.

Typically, the surface layer is brown, friable channery loam about 6 inches thick. The subsoil extends to a depth of 60 inches or more. It is yellowish brown, friable channery silt loam to a depth of 20 inches; strong brown, firm channery heavy loam between depths of 20 and 32 inches; and strong brown, very firm and brittle channery heavy loam below a depth of 32 inches.

Included with this soil in mapping are small areas of Berks, Murrill, and Buchanan soils. Included soils make up 5 to 15 percent of the unit.

The permeability of this Laidig soil is moderately slow, and the available water capacity is moderate. Runoff is rapid, and the erosion hazard is severe. The rooting depth is restricted by a seasonal high water table at a depth of 36 to 48 inches and by the very firm and brittle part of the subsoil. Unless limed, the soil is extremely acid to strongly acid throughout.

Most of the acreage of this soil is used for farming and woodland. A few small areas are used for community development.

This soil is suited to cultivated crops. The severe erosion hazard is a major management concern; stripcropping, minimum tillage, using cover crops, incorporating crop residue into the soil and using diversion terraces and grassed waterways help to control runoff and reduce erosion.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain desirable pasture plants.

This soil is suited to trees, and the potential for woodland is moderately high. Slope is the main management limitation. Erosion can be reduced by constructing access roads on the contour of the landscape.

Slope, the seasonal high water table, and the moderately slow permeability of the soil are the main limitations for community development. They especially limit the soil for onsite waste disposal and as a site for buildings with basements.

The capability subclass is IVe; woodland ordination symbol 3r.

LeB—Laidig extremely stony loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on lower mountain slopes. Areas are irregular in shape and range from 3 to 200 acres. Stones that are 10 to 36 inches in diameter cover 15 to 50 percent of the surface.

Typically, the surface layer is black, friable channery loam about 2 inches thick. The subsurface layer is light yellowish brown, friable channery loam 4 inches thick. The subsoil extends to a depth of 60 inches or more. It is yellowish brown, friable channery silt loam to a depth of 20 inches; strong brown, firm channery heavy loam between depths of 20 and 32 inches; and strong brown, very firm and brittle channery heavy loam below a depth of 32 inches.

Included with this soil in mapping are small areas of Berks, Murrill, and Buchanan soils. Also included are areas of Laidig soils where stones cover more than 50 percent of the surface. Included soils make up 5 to 15 percent of the unit.

The permeability of this Laidig soil is moderately slow, and the available water capacity is moderate. Runoff is medium. The rooting depth is restricted by a seasonal high water table at a depth of 36 to 48 inches and by the very firm and brittle part of the subsoil. Unless limed, the soil is extremely acid to strongly acid throughout.

Most areas of this soil are wooded. A few small areas are used for community development.

The stones on the surface interfere with the use of most types of tillage equipment and make the soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is moderatly high. The stones on the surface interfere with timber harvesting and planting.

The stones on the surface, the high water table, and the moderately slow permeability of the soil are the main limitations for community development, especially for onsite sewage disposal and as a building site. The stony surface also limits the establishment of lawns and landscaping.

The capability subclass is VIIs; woodland ordination symbol 3x.

LeD—Laidig extremely stony loam, 8 to 25 percent slopes. This soil is sloping and moderately steep, deep, and well drained. It is on upper mountain foot slopes. Areas are irregular in shape and range from 2 to 400 acres. Stones that are 10 to 36 inches in diameter cover 15 to 50 percent of the surface.

Typically, the surface layer is black, friable channery loam about 2 inches thick. The subsurface layer is light yellowish brown, friable channery loam 4 inches thick. The subsoil extends to a depth of 60 inches or more. It is yellowish brown, friable channery silt loam to a depth of 20 inches; strong brown, firm channery heavy loam between depths of 20 and 32 inches; and strong brown, very firm and brittle channery heavy loam below a depth of 32 inches.

Included with this soil in mapping are small areas of Berks, Murrill, Meckesville, and Buchanan soils. Also included are areas of Laidig soils where stones cover more than 50 percent of the surface. Included soils make up 5 to 20 percent of the unit.

The permeability of this Laidig soil is moderately slow, and the available water capacity is moderate. Runoff is rapid. The rooting depth is restricted by a seasonal high water table at a depth of 36 to 48 inches and by the very firm and brittle part of the subsoil. Unless limed, the soil is extremely acid to strongly acid throughout.

Most areas of this soil are wooded. A few small areas are used for community development.

The stones on the surface interfere with the use of tillage equipment and make the soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is moderately high. The stones on the surface and the slope of the soil interfere with timber harvesting. The erosion hazard can be reduced by constructing access roads on the contour of the landscape.

Slope, the stones on the surface, the seasonal high water table, and the moderately slow permeability of the soil are the main limitations for community development. They especially limit onsite waste disposal. The slope and stones on the surface also limit the soil for lawns, for landscaping, and as a site for buildings and roads.

The capability subclass is VIIs; woodland ordination symbol 3x.

LeF—Laidig extremely stony loam, 25 to 45 percent slopes. This soil is steep, deep, and well drained. It is on middle and lower mountain slopes. Areas are irregular in shape and range from 5 to 700 acres. Stones that are 10 to 36 inches in diameter cover 15 to 50 percent of the surface (fig. 9).

Typically, the surface layer is black, friable channery loam about 2 inches thick. The subsurface layer is light yellowish brown, friable channery loam 4 inches thick. The subsoil extends to a depth of 60 inches or more. It is yellowish brown, friable channery silt loam to a depth of 20 inches; strong brown, firm channery heavy loam between depths of 20 and 32 inches; and strong brown, very firm and brittle channery heavy loam at a depth of more than 32 inches.

Included with this soil in mapping are small areas of Hazleton and Berks soils, areas where stones cover 50 to 90 percent of the surface, and areas where stones cover nearly all of the surface. Also included are areas of Laidig soils in which the lower part of the subsoil is not so firm or brittle or is at a depth of more than 50 inches. Included soils make up 5 to 30 percent of the unit.

The permeability of this Laidig soil is moderately slow, and the available water capacity is moderate. Runoff is rapid. The rooting depth is restricted by a seasonal high

Figure 9.—An area of Laidig extremely stony loam, 25 to 45 percent slopes.

water table at a depth of 36 to 48 inches and by the very firm and brittle part of the subsoil. Unless limed, the soil is extremely acid to strongly acid throughout.

Slope and the stones on the surface make this soil generally unsuitable for farming. The soil is suited to trees, and most areas are wooded. The potential for woodland is moderately high. The slope and stones interfere with timber harvesting and maintenance operations. Constructing roads on the contour of the landscape during timber harvesting helps to reduce erosion.

Slope, the stones on the surface, and the seasonal high water table limit this soil for most types of community development.

The capability subclass is VIIs; woodland ordination symbol 3x.

LkB—Leck Kill channery silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on the tops of ridges. Areas are irregular in shape and range from about 2 to 60 acres.

Typically, the surface layer is dark reddish brown, friable channery silt loam about 12 inches thick. The subsoil is dark reddish brown and friable and is 26

inches thick. It is channery silt loam in the upper 10 inches and shaly silty clay loam in the lower 16 inches. The substratum is reddish brown, firm very shaly silt loam 7 inches thick. Shale and sandstone bedrock is at a depth of 45 inches.

Included with this soil in mapping are small areas of Albrights, Meckesville, and Bedington soils. Also included are a few areas of a soil similar to this Leck Kill soil but that is less than 40 inches deep to bedrock. Included soils make up 5 to 15 percent of the unit.

The permeability of this Leck Kill soil is moderate to moderately rapid, and the available water capacity is moderate. Runoff is medium and the erosion hazard is moderate. In unlimed areas the soil is very strongly acid and strongly acid throughout. The root zone is more than 40 inches thick.

Most areas of this soil are farmed. A few small areas are wooded, and a few are used for community development.

This soil is suited to cultivated crops. Rock fragments in the soil interfere with some planting and harvesting operations. Stripcropping, using cover crops, incorporating crop residue into the soil, and using grasses and legumes in the cropping system help to increase organic matter content, improve tilth, and control erosion.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain good quality pastures.

This soil is suited to trees, and the potential for woodland is moderately high.

The depth to bedrock is the main limitation of the soil for community development, especially for onsite waste disposal and as a building site. Rock fragments in the soil limit lawns and landscaping.

The capability subclass is IIe; woodland ordination symbol 3o.

LkC—Leck Kill channery silt loam, 8 to 15 percent slopes. This soil is sloping, deep, and well drained. It is on side slopes of ridges. Areas are irregular in shape and range from about 2 to 130 acres.

Typically, the surface layer is dark reddish brown, friable channery silt loam about 12 inches thick. The subsoil is dark reddish brown and friable and is 26 inches thick. It is channery silt loam in the upper 10 inches and shaly silty clay loam in the lower 16 inches. The substratum is reddish brown, firm very shaly silt loam 7 inches thick. Shale and sandstone bedrock is at a depth of 45 inches.

Included with this soil in mapping are small areas of Albrights, Meckesville, and Bedington soils. Also included are a few areas of a soil similar to this Leck Kill soil but that is less than 40 inches deep to bedrock. Inclusions make up 5 to 15 percent of this unit.

The permeability of this Leck Kill soil is moderate to moderately rapid, and the available water capacity is moderate. Runoff is rapid, and the erosion hazard is severe. In unlimed areas the soil is very strongly acid and strongly acid throughout. The root zone is more than 40 inches thick.

Most areas of this soil are farmed. Some areas are wooded, and some are used for community development.

This soil is suited to cultivated crops. Rock fragments in the soil interfere with some planting and harvesting operations. The severe erosion hazard is a major management concern. It can be reduced by using stripcropping, cover crops, and grassed waterways, by incorporating crop residue into the soil, and by including grasses and legumes in the cropping system. Incorporating crop residue and manure into the soil helps to maintain tilth.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain good quality pastures.

This soil is suited to trees, and the potential for woodland is moderately high.

Slope and the depth to bedrock are the main limitations of the soil for community development, especially for onsite waste disposal. Rock fragments in the soil limit lawns and landscaping.

The capability subclass is IIIe; woodland ordination symbol 3o.

LkD—Leck Kill channery silt loam, 15 to 25 percent slopes. This soil is moderately steep, deep, and well drained. It is on the side slopes of ridges. Areas are irregular in shape and range from about 2 to 192 acres.

Typically, the surface layer is dark reddish brown, friable channery silt loam about 12 inches thick. The subsoil is dark reddish brown and friable and is 26 inches thick. It is channery silt loam in the upper 10 inches and shaly silty clay loam in the lower 16 inches. The substratum is reddish brown, firm very shaly silt loam 4 inches thick. Shale and sandstone bedrock is at a depth of 42 inches.

Included with this soil in mapping are small areas of Albrights, Meckesville, and Bedington soils. Also included are a few areas of a soil similar to this Leck Kill soil but that is less than 40 inches deep to bedrock. Included soils make up 10 to 20 percent of the unit.

The permeability of this Leck Kill soil is moderate to moderately rapid, and the available water capacity is moderate. Runoff is very rapid, and the erosion hazard is very severe. In unlimed areas the soil is very strongly acid and strongly acid throughout. The root zone is 40 inches thick or more.

Most areas of this soil are wooded. A few areas are farmed, and a few are used for community development.

This soil is suited to cultivated crops. Rock fragments in the soil interfere with some planting and harvesting operations. The very severe erosion hazard is a major management concern. Stripcropping, incorporating crop residue into the soil, using cover crops and grasses and legumes in the cropping system, and using grassed

waterways and diversion terraces help to control runoff and erosion. Incorporation of plant residue and manure into the soil helps to improve tilth.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain good quality pastures.

This soil is suited to trees, and the potential for woodland is moderately high. Slope limits the use of some types of equipment. Constructing roads on the contour of the landscape during timber harvesting helps reduce erosion.

Slope and the depth to bedrock are the main limitations of the soil for community development, especially for onsite waste disposal and as a site for buildings. Rock fragments in the soil and slope limit lawns and landscaping.

The capability subclass is IVe; woodland ordination symbol 3r.

LLF—Leck Kill channery silt loam, very steep. This soil is deep and well drained. It is on ridges. Areas are irregular in shape and range from 10 to 200 acres. Slopes range from 25 to 60 percent.

Typically, the surface layer is black, friable channery silt loam about 1 inch thick. The subsurface layer is red, friable channery silt loam 4 inches thick. The subsoil is reddish brown and friable and is 29 inches thick. It is channery silt loam in the upper 10 inches and shaly silty clay loam in the lower 19 inches. The substratum is reddish brown, firm shaly silt loam 8 inches thick. Shale and sandstone bedrock is at a depth of 42 inches.

Included with this soil in mapping are areas of Meckesville, Bedington, and Berks soils. Also included are areas of a soil similar to this Leck Kill soil but that has less clay in the subsoil, areas that are less than 40 inches deep to bedrock, and areas that have stones or exposed bedrock on the surface. Included areas make up 10 to 30 percent of the unit.

The permeability of this Leck Kill soil is moderate to moderately rapid, and the available water capacity is moderate. Runoff is very rapid, and the erosion hazard is very severe. In unlimed areas the soil is very strongly acid and strongly acid throughout. The root zone extends to a depth of 3-1/2 to 6 feet.

Slope makes this soil generally unsuitable for farming. The soil is suited to trees, and most of the acreage is wooded. The potential for woodland is moderately high, but slope interferes with the use of equipment.

Slope also limits the soil for most types of community development.

The capability subclass is VIIe; woodland ordination symbol 3r.

LmB—Leetonia flaggy loamy sand, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on mountaintops. Areas are irregular in shape and range from about 4 to 265 acres.

Typically, the surface layer is black, very friable flaggy loamy sand about 1 inch thick. The subsurface layer is brown, loose flaggy loamy sand 13 inches thick. The subsoil is 27 inches thick. It is dark reddish brown, loose, and very firm channery loamy sand in the upper 4 inches and strong brown and brownish yellow, very friable very channery and flaggy loamy sand in the lower 23 inches. The substratum is yellow, loose flaggy sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Hazleton, Clymer, Lehew, and Laidig soils. Included soils make up 10 to 20 percent of the unit.

The permeability of this Leetonia soil is moderately rapid, and the available water capacity is low. Surface runoff is medium. The root zone is more than 40 inches thick. Unless limed, the soil is extremely acid to very strongly acid throughout.

Most areas of this soil are wooded. Rock fragments in and on the soil make it generally unsuitable for farming and poorly suited to trees. Tree growth is slow because of the low available water capacity and low natural fertility.

The moderately rapid permeability and the stone fragments in and on the soil are the main limitations for community development.

The capability subclass is VIs; woodland ordination symbol 5f.

LnD—Lehew very stony loam, 8 to 25 percent slopes. This soil is sloping and moderately steep, moderately deep, and well drained to excessively drained. It is on the tops of mountain ridges. Areas are irregular in shape and range from about 2 to 200 acres. Stones that are 10 to 36 inches in diameter cover 3 to 15 percent of the surface.

Typically, the surface layer is dark brown, friable gravelly loam about 1 inch thick. The subsurface layer is brown, friable gravelly loam 4 inches thick. The subsoil is friable, reddish brown gravelly loam and gravelly fine sandy loam 12 inches thick. The substratum is reddish brown, friable very gravelly sandy loam 9 inches thick. Sandstone bedrock is at a depth of 26 inches.

Included with this soil in mapping are small areas of Hazleton, Leck Kill, and Laidig soils and Dystrochrepts. Also included are small areas of Rubble land and areas of a soil similar to this Lehew soil but that has bedrock at a depth of more than 40 inches. Included areas make up 10 to 20 percent of the unit.

The permeability of this Lehew soil is moderately rapid to rapid, and the available water capacity is low. Surface runoff is slow to rapid. The root zone is 20 to 40 inches thick. In unlimed areas the soil is very strongly acid and strongly acid throughout.

The stones on the surface interfere with the use of the tillage equipment and make the soil generally unsuitable for farming.

Most areas of the soil are wooded. The soil is suited to trees, and the potential for woodland is moderately high. Slope is the main limitation for woodland management.

The stones on the surface, slope, and the depth to bedrock limit the soil for community development, especially as a site for buildings with basements and for onsite waste disposal.

The capability subclass is VIs; woodland ordination symbol 3r.

LnF—Lehew very stony loam, 25 to 50 percent slopes. This soil is steep, moderately deep, and well drained and excessively drained. It is on mountain ridges. Areas are irregular in shape and range from about 2 to 265 acres. Stones that are 10 to 36 inches in diameter cover 3 to 15 percent of the surface.

Typically, the surface layer is dark brown gravelly loam about 1 inch thick. The subsurface layer is brown gravelly loam 4 inches thick. The subsoil is friable, reddish brown gravelly loam and gravelly fine sandy loam 12 inches thick. The substratum is reddish brown very gravelly sandy loam 9 inches thick. Sandstone bedrock is at a depth of 26 inches.

Included with this soil in mapping are small areas of Hazleton, Leck Kill, and Laidig soils and Dystrochrepts. Also included are small areas of Rubble land. Included areas make up 10 to 20 percent of the unit.

The permeability of this Lehew soil is moderately rapid to rapid, and the available water capacity is low. Surface runoff is very rapid. The root zone is 20 to 40 inches thick. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Slope and the stones on the surface make this soil generally unsuitable for farming.

Most areas of the soil are wooded. The soil is suited to trees, and the potential for woodland is moderately high. Slope and the stones on the surface interfere with timber harvesting and maintenance operations.

The slope and stones on the surface limit the soil for community development.

The capability subclass is VIIs; woodland ordination symbol 3r.

Lo—Linden soils. These soils are nearly level, deep, and well drained. They are on flood plains. The surface layer is loam, silt loam, and fine sandy loam. Areas are irregular in shape and range from 2 to 260 acres.

Typically, the surface layer is dark reddish gray, friable loam about 12 inches thick. The subsoil is reddish brown, friable loam about 18 inches thick. The substratum extends to a depth of 60 inches or more. It is dark brown, friable and loose fine sandy loam to a depth of 45 inches and dark brown, loose very gravelly sandy loam below a depth of 45 inches.

Included with this soil in mapping are small areas of Basher, Holly, and Monongahela soils and Udifluvents and Dystrochrepts. Included soils make up 5 to 15 percent of the unit.

The permeability of these Linden soils is moderately rapid, and the available water capacity is high. These soils are occasionally flooded. Surface runoff is slow, and the erosion hazard is slight. The root zone extends to a depth of more than 40 inches. Unless limed, the soil is very strongly acid to medium acid throughout.

Most areas of this soil are farmed. A few small areas are wooded or used for community development.

These soils are suited to cultivated crops, but flooding in some years delays tillage operations or damages crops. Cover crops help to protect the soils from flood damage.

The soils are suited to pasture. Use of proper stocking rates and pasture rotation help to maintain desirable pasture plant species.

These soils are suited to trees, and the potential for woodland is very high.

Flooding limits the soils for most types of community development, especially for onsite waste disposal and housing.

The capability class is I; woodland ordination symbol 1o.

Lp—Lobdell silt loam. This soil is nearly level, deep, and moderately well drained. It is on flood plains. Areas are irregular in shape and range from 2 to 90 acres.

Typically, the surface layer is dark grayish brown, friable silt loam about 7 inches thick. The subsoil is 22 inches thick. It is brown, friable light silty clay loam that is mottled in the lower part. The substratum is mottled, grayish brown, friable gravelly very fine sandy loam and silt loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Linden and Holly soils and Udifluvents and Dystrochrepts. Also included are small areas of fill from adjacent limestone quarries. Included areas make up 5 to 15 percent of the unit.

The permeability of this Lobdell soil is moderate, and the available water capacity is high. Runoff is slow, and the erosion hazard is slight. This soil is occasionally flooded and has a seasonal high water table at a depth of 18 to 36 inches. The root zone is limited by the seasonal high water table. The soil is slightly acid to neutral throughout in unlimed areas.

Most areas of this soil are in pasture. A few small areas are wooded.

This soil is suited to cultivated crops. Cover crops help to protect the soil from flood damage. Flooding usually is not a limitation during harvesting.

The soil is suited to pasture, especially to water-tolerant grasses and legumes. Use of proper stocking rates and pasture rotation help to maintain desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is very high.

The hazard of flooding and the seasonal high water table limit this soil for community development, especially for onsite waste disposal and as a building site.

The capability subclass is IIw; woodland ordination sybmol 1o.

MeB—Meckesville gravelly silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on foot slopes and in drainageways. Areas are irregular in shape and range from about 2 to 95 acres.

Typically, the surface layer is dark reddish brown, friable gravelly silt loam about 9 inches thick. The subsoil extends to a depth of 60 inches or more. It is reddish brown, friable and firm gravelly silty clay loam and gravelly clay loam to a depth of 29 inches. At a depth of more than 29 inches, it is reddish brown and weak red, very firm and brittle gravelly light clay loam.

Included with this soil in mapping are small areas of Hazleton, Leck Kill, Laidig, and Albrights soils. Also included are small areas of Meckesville soils with stones on the surface. Included soils make up 5 to 10 percent of the unit.

The permeability of this Meckesville soil is moderately slow, and the available water capacity is moderate. Surface runoff is medium, and the erosion hazard is moderate. In unlimed areas the soil is very strongly acid and strongly acid throughout. The root zone is restricted to a depth of 26 to 48 inches by the firm and brittle part of the subsoil.

Most areas of this soil are farmed. Some areas are wooded or used for community development.

This soil is suited to cultivated crops. Minimum tillage, stripcropping, and using cover crops and grassed waterways help to control runoff and reduce erosion. Incorporating crop residue and manure into the soil help to improve soil tilth.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is high. Machine planting is practical on larger areas.

The moderately slow permeability of the soil restricts onsite waste disposal and is the main limitation for community development.

The capability subclass is IIe; woodland ordination symbol 2o.

MeC—Meckesville gravelly silt loam, 8 to 15 percent slopes. This soil is sloping, deep, and well drained. It is on foot slopes and in drainageways. Areas are irregular in shape and range from about 2 to 65 acres.

Typically, the surface layer is dark reddish brown gravelly silt loam about 8 inches thick. The subsoil extends to a depth of 60 inches or more. It is reddish brown, friable and firm gravelly silty clay loam and gravelly clay loam to a depth of 29 inches. At a depth of more than 29 inches, it is reddish brown and weak red, very firm and brittle gravelly light clay loam.

Included with this soil in mapping are small areas of Hazleton, Leck Kill, Laidig, and Albrights soils. Also included are small areas of Meckesville soils with stones on the surface. Included soils make up 5 to 15 percent of the unit.

The permeability of this Meckesville soil is moderately slow, and the available water capacity is moderate. Surface runoff is rapid, and the erosion hazard is severe. In unlimed areas the soil is very strongly acid and strongly acid throughout. The root zone is restricted to a depth of 26 to 48 inches by the firm and brittle part of the subsoil.

Most areas of this soil are farmed. Some areas are wooded or used for community development.

This soil is suited to cultivated crops. The severe erosion hazard is a major management concern. Minimum tillage, stripcropping, and using cover crops, diversions, and grassed waterways help to control runoff and reduce erosion. Incorporating crop residue and manure into the soil helps to improve soil tilth.

This soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain desirable pasture plant species.

The soil is suited to trees, and the potential for woodland is high. Machine planting is practical on larger areas.

Slope and the moderately slow permeability are the main limitations of the soil for most types of community development. The moderately slow permeability especially limits onsite waste disposal.

The capability subclass is IIIe; woodland ordination symbol 2o.

MkB—Meckesville very stony silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on foot slopes and in drainageways. Areas are irregular in shape and range from about 2 to 80 acres. Stones that are 10 to 36 inches in diameter cover 3 to 15 percent of the surface.

Typically, the surface layer is dark reddish brown, very friable gravelly silt loam about 2 inches thick. The subsurface layer is dark reddish gray, friable gravelly silt loam 2 inches thick. The subsoil extends to a depth of 60 inches or more. It is reddish brown, friable and firm gravelly silty clay loam and gravelly clay loam to a depth of 29 inches. At a depth of more than 29 inches, it is reddish brown and weak red, very firm and brittle gravelly light clay loam.

Included with this soil in mapping are small areas of Laidig, Hazleton, Albrights, and Leck Kill soils. Also included are small areas of Meckesville soils where stones cover more than 15 percent of the surface. Included soils make up 5 to 15 percent of the unit.

The permeability of this Meckesville soil is moderately slow, and the available water capacity is moderate. Surface runoff is medium. In unlimed areas the soil is very strongly acid and strongly acid throughout. The root zone is restricted to a depth of 26 to 48 inches by the firm and brittle part of the subsoil.

Most areas of this soil are wooded. A few small areas used for pasture or community development.

The stones on the surface interfere with the use of tillage and harvesting equipment and make the soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is high.

The stones on the surface and the moderately slow permeability limit the soil for community development. The moderately slow permeability especially limits the soil for onsite waste disposal.

The capability subclass is VIs; woodland ordination symbol 2o.

MkD—Meckesville very stony silt loam, 8 to 25 percent slopes. This soil is sloping and moderately steep, deep, and well drained. It is on foot slopes and in drainageways. Areas are irregular in shape and range from about 2 to 570 acres. Stones that are 10 to 36 inches in diameter cover 3 to 15 percent of the surface.

Typically, the surface layer is dark reddish brown, very friable gravelly silt loam about 2 inches thick. The subsurface layer is dark reddish gray, friable gravelly silt loam 2 inches thick. The subsoil extends to a depth of 60 inches or more. It is reddish brown, friable and firm gravelly silty clay loam and gravelly clay loam to a depth of 29 inches. At a depth of more than 29 inches, it is reddish brown and weak red, very firm and brittle gravelly light clay loam.

Included with this soil in mapping are small areas of Laidig, Hazleton, Albrights, and Leck Kill soils. Also included are small areas of Meckesville soils where stones cover more than 15 percent of the surface. Included soils make up 5 to 15 percent of the unit.

The permeability of this Meckesville soil is moderately slow, and the available water capacity is moderate. Surface runoff is rapid. In unlimed areas the soil is very strongly acid and strongly acid throughout. The root zone is restricted to a depth of 26 to 48 inches by the firm and brittle part of the subsoil.

Most areas of this soil are wooded. A few small areas are used for pasture or community development.

The stones on the surface interfere with the use of tillage and harvesting equipment and make the soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is high. Slope limits the use of equipment for maintenance and timber harvesting. Constructing logging roads on the contour of the landscape helps to control erosion during harvesting.

Slope, the stones on the surface, and the moderately slow permeability limit the soil for community development. The moderately slow permeability and slope especially limit the soil for onsite waste disposal and as a building site.

The capability subclass is VIs; woodland ordination symbol 2r.

MnB—Mertz channery silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on narrow ridgetops. Areas are irregular in shape and range from 2 to 178 acres.

Typically, the surface layer is dark grayish brown, friable channery silt loam about 10 inches thick. The subsoil extends to a depth of 60 inches or more. It is yellowish brown, friable channery silty clay loam that is mottled in the lower part.

Included with this soil in the mapping are small areas of Vanderlip, Morrison, Edom, and Hublersburg soils. Included soils make up 5 to 15 percent of the unit.

The permeability of this Mertz soil is moderately slow, and the available water capacity is high. Runoff is medium, and the erosion hazard is moderate. Where unlimed, the soil is strongly acid to neutral in the upper part and very strongly acid and strongly acid in the lower part.

Most areas of this soil are farmed. A few areas are used for community development.

This soil is suited to cultivated crops, but rock fragments in the soil interfere with some tillage and planting operations. Stripcropping, using cover crops, and incorporating crop residue into the soil help to control runoff and reduce erosion.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain the desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is high. A high rate of seedling mortality is the main management concern. Machine planting is practical on large areas.

The rock fragments in the soil and the moderately slow permeability are the main limitations for community development. The permeability limits onsite waste disposal, and the rock fragments restrict landscaping and the establishment of lawns.

The capability subclass is IIe; woodland ordination symbol 2f.

MnC—Mertz channery silt loam, 8 to 15 percent slopes. This soil is sloping, deep, and well drained. It is on narrow ridgetops. Areas are irregular in shape and range from 2 to 100 acres.

Typically, the surface layer is dark grayish brown, friable, channery silt loam about 10 inches thick. The subsoil extends to a depth of 60 inches or more. It is yellowish brown, friable channery silty clay loam that is mottled in the lower part.

Included with this soil in mapping are small areas of Vanderlip, Morrison, Edom, and Hublersburg soils. Included soils make up 5 to 15 percent of the unit.

The permeability of this Mertz soil is moderately slow, and the available water capacity is high. Runoff is medium, and the erosion hazard is severe. Where unlimed, the soil is strongly acid to neutral in the upper part and very strongly acid and strongly acid in the lower part.

Most areas of this soil are farmed. A few small areas are used for community development.

This soil is suited to cultivated crops. Stripcropping, using cover crops and grassed waterways, and

incorporating crop residue into the soil help to control runoff and reduce erosion.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is high. A high rate of seedling mortality is the main management concern. Machine planting is practical on large areas.

Rock fragments in the soil and the moderately slow permeability are the main limitations for community development. The permeability limits onsite waste disposal, and the rock fragments restrict landscaping and the establishment of lawns.

The capability subclass is IIIe; woodland ordination symbol 2f.

MnD—Mertz channery silt loam, 15 to 25 percent slopes. This soil is moderately steep, deep, and well drained. It is on narrow ridgetops. Areas are irregular in shape and range from 3 to 50 acres.

Typically, the surface layer is dark grayish brown, friable channery silt loam about 10 inches thick. The subsoil extends to a depth of 60 inches or more. It is yellowish brown, friable channery silty clay loam that is mottled in the lower part.

Included with this soil in mapping are small areas of Vanderlip, Morrison, Edom, and Hublersburg soils. Included soils make up 5 to 15 percent of the unit.

The permeability of this Mertz soil is moderately slow, and the available water capacity is high. Runoff is rapid, and the erosion hazard is very severe. Where unlimed, the soil is strongly acid to neutral in the upper part and very strongly acid and strongly acid in the lower part.

Most areas of this soil are farmed. A few areas are wooded or used for community development.

This soil is suited to cultivated crops, but the erosion hazard is a major management concern. Stripcropping, using cover crops, grassed waterways, and diversion terraces, and incorporating crop residue into the soil help to control runoff and reduce erosion.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is high. Slope limits the use of equipment, and the soil has a high rate of seedling mortality. Erosion can be reduced by constructing roads on the contour of the landscape during timber harvesting.

Slope, the moderately slow permeability, and rock fragments in the soil are the main limitations for community development. The slope and permeability especially limit the soil for onsite waste disposal, and the slope and rock fragments restrict landscaping and the establishment of lawns.

The capability subclass is IVe; woodland ordination symbol 2r.

MoB—Monongahela silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and moderately well drained. It is on the slopes of river terraces. Areas are irregular in shape and range from 2 to 80 acres.

Typically, the surface layer is dark brown, very friable silt loam about 6 inches thick. The subsoil is 48 inches thick. It is light yellowish brown, friable gravelly light silty clay loam in the upper 14 inches and mottled, brown, very firm and brittle silt loam in the lower 34 inches. The substratum is mottled, strong brown, firm clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Tyler, Purdy, Linden, and Basher soils. Also included are areas of Monongahela soils that have rock fragments in the surface layer and areas of a soil similar to this Monongahela soil but in which the combined thickness of the surface layer and subsoil is more than 72 inches. Included soils make up 10 to 30 percent of the unit.

The permeability of this Monongahela soil is moderately slow to slow, and the available water capacity is moderate. Runoff is medium, and the erosion hazard is moderate. The root zone is restricted by the firm and brittle part of the subsoil and by a seasonal high water table at a depth of 18 to 36 inches. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are in nonfarm uses, primarily housing and industrial uses. Some areas are farmed, and a few small areas are in woodland.

This soil is suited to cultivated crops. Stripcropping, minimum tillage, using cover crops, and incorporating crop residue into the soil help to control runoff and reduce erosion.

The soil is suited to pasture. In some areas the seasonal high water table limits deep-rooted legumes. Use of proper stocking rates and pasture rotation help to maintain the desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is moderately high. Harvesting is delayed in some years by the seasonal high water table. The soil is suitable for machine planting.

The moderately slow to slow permeability and the seasonal high water table are the main limitations of the soil for community development. They especially limit the soil for onsite waste disposal and as a site for buildings with basements.

The capability subclass is IIe; woodland ordination symbol 3w.

MrB—Morrison sandy loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on narrow to moderately broad side slopes of valleys. The areas range from 2 to 220 acres.

Typically, the surface layer is dark yellowish brown, friable sandy loam about 10 inches thick. The subsoil is yellowish brown, friable sandy loam and gravelly sandy clay loam 35 inches thick. The substratum is strong brown and yellowish brown, loose gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Buchanan, Hublersburg, and Vanderlip soils. Also included are a few areas of Morrison soils that have a cobbly, cherty, and gravelly surface layer. Included soils make up 5 to 10 percent of the unit.

The permeability of this Morrison soil is moderate to moderately rapid, and the available water capacity is high. Runoff is medium, and the erosion hazard is moderate. The root zone is more than 60 inches thick. In unlimed areas the soil is very strongly acid and strongly acid in the upper part and strongly acid and medium acid in the lower part.

Most areas of this soil are farmed. A few small areas are used for community development.

This soil is well suited to cultivated crops. Stripcropping, minimum tillage, using cover crops, and incorporating crop residue into the soil help to reduce runoff and erosion.

The soil is suited to pasture. Use of proper stocking rates and rotation of pastures help to maintain the desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is moderately high. Large areas are suited to machine planting.

The moderate to moderately rapid permeability of the soil restricts onsite waste disposal and is the main limitation for community development.

The capability subclass is IIe; woodland ordination symbol 3o.

MrC—Morrison sandy loam, 8 to 15 percent slopes. This soil is sloping, deep, and well drained. It is on narrow to moderately broad side slopes of valleys. The areas range from 2 to 190 acres.

Typically, the surface layer is dark yellowish brown, friable sandy loam about 8 inches thick. The subsoil is yellowish brown, friable sandy loam and gravelly sandy clay loam 35 inches thick. The substratum is strong brown and yellowish brown, loose gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Buchanan, Vanderlip, and Hublersburg soils. Also included are a few areas of Morrison soils that have a cobbly, cherty, and gravelly surface layer. Included soils make up 5 to 10 percent of the unit.

The permeability of this Morrison soil is moderate to moderately rapid, and the available water capacity is high. Runoff is rapid, and the erosion hazard is severe. The root zone is more than 60 inches thick. In unlimed areas the soil is very strongly acid and strongly acid in the upper part and strongly acid and medium acid in the lower part.

Most areas of this soil are farmed. A few areas are in woodland or are used for community development.

This soil is suited to cultivated crops. Stripcropping, minimum tillage, incorporating crop residue into the soil, and using cover crops and grasses and legumes in the cropping system help to reduce erosion.

The soil is suited to pasture. Use of proper stocking rates and rotation of pastures help to maintain the desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is moderately high. The soil is suitable for machine planting.

Slope and the moderate to moderately rapid permeability limit the soil for community development, especially for onsite waste disposal.

The capability subclass is IIIe; woodland ordination symbol 3o.

MrD—Morrison sandy loam, 15 to 25 percent slopes. This soil is moderately steep, deep, and well drained. It is on narrow side slopes of valleys. The areas range from 2 to 50 acres.

Typically, the surface layer is dark yellowish brown, friable sandy loam about 7 inches thick. The subsoil is yellowish brown, friable sandy loam and gravelly sandy clay loam 35 inches thick. The substratum is strong brown and yellowish brown, loose gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Buchanan, Vanderlip, and Hublersburg soils. Also included are a few areas of Morrison soils that have a cobbly, cherty, and gravelly surface layer. Included soils make up 5 to 10 percent of the unit.

The permeability of this Morrison soil is moderate to moderately rapid. Runoff is rapid, and the erosion hazard is very severe. The root zone is more than 60 inches thick. In unlimed areas the soil is very strongly acid and strongly acid in the upper part and strongly acid and medium acid in the lower part.

Most areas of this soil are farmed or wooded. Some small areas are used for community development.

This soil is suited to cultivated crops, but the severe erosion hazard is a major management concern. Minimum tillage, stripcropping, using diversion terraces and grassed waterways, and using grasses and legumes in the cropping systems help to reduce erosion.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain the desirable pasture plant species.

The soil is suited to trees, and the potential for woodland is moderately high. Slope limits the use of equipment for maintenance and timber harvesting. Constructing roads on the contour helps to control erosion during harvesting.

Slope is the main limitation on the soil for community development, especially for onsite waste disposal and as a building site.

The capability subclass is IVe; woodland ordination symbol 3r.

MsB—Morrison very stony sandy loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on narrow to moderately broad side slopes and ridgetops of valleys. The areas range from 2

to 220 acres. Stones that are 10 to 36 inches in diameter cover 3 to 15 percent of the surface.

Typically, the surface layer is dark brown, friable sandy loam about 3 inches thick. The subsurface layer is dark yellowish brown, friable sandy loam 3 inches thick. The subsoil is yellowish brown, friable sandy loam and gravelly sandy clay loam 39 inches thick. The substratum is strong brown and yellowish brown, loose gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Buchanan, Laidig, and Vanderlip soils. Included soils make up 5 to 10 percent of the unit.

The permeability of this Morrison soil is moderate to moderately rapid. Runoff is medium. The root zone is more than 60 inches thick. In unlimed areas the soil is very strongly acid and strongly acid in the upper part and strongly acid and medium acid in the lower part.

Most areas of this soil are wooded. Some areas are used for pasture or community development.

The stones on the surface interfere with the use of tillage equipment and make the soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is moderately high.

The stones on the surface and the moderate to moderately rapid permeability limit this soil for community development. The permeability restricts the soil for onsite waste disposal, and the stones on the surface limit landscaping and the establishment of lawns.

The capability subclass is VIs; woodland ordination symbol 3o.

MsD—Morrison very stony sandy loam, 8 to 25 percent slopes. This soil is sloping and moderately steep, deep, and well drained. It is on narrow to moderately broad side slopes and ridgetops of valleys. The areas range from 2 to 350 acres. Stones that are 10 to 36 inches in diameter cover 3 to 15 percent of the surface.

Typically, the surface layer is dark brown, friable sandy loam about 3 inches thick. The subsurface layer is dark yellowish brown, friable sandy loam 3 inches thick. The subsoil is yellowish brown, friable sandy loam and gravelly sandy clay loam 39 inches thick. The substratum is strong brown and yellowish brown, loose gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Buchanan, Laidig, and Vanderlip soils. Also included are a few small areas of exposed limestone bedrock. Included soils make up 5 to 10 percent of the unit.

The permeability of this Morrison soil is moderate to moderately rapid, and the available water capacity is high. Runoff is rapid. The root zone is 60 inches thick or more. In unlimed areas the soil is very strongly acid and strongly acid in the upper part and strongly acid and medium acid in the lower part.

Most areas of this soil are wooded. Some small areas are used for community development.

The stones on the surface interfere with the use of tillage equipment and make the soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is moderately high. Slope limits the use of equipment for timber harvesting and maintenance. Building logging roads on the contour of the landscape helps to control erosion during timber harvesting.

Slope, the stones on the surface, and the moderate to moderately rapid permeability limit the soil for community development. Slope and the permeability restrict the soil for onsite waste disposal, and slope and the stones on the surface limit landscaping and the establishment of lawns.

The capability subclass is VIs; woodland ordination symbol 3r.

MsF—Morrison very stony sandy loam, 25 to 50 percent slopes. This soil is steep, deep, and well drained. It is on narrow side slopes of valleys. Areas range from 2 to 100 acres. Stones that are 10 to 36 inches in diameter cover 3 to 15 percent of the surface.

Typically, the surface layer is very dark brown, friable sandy loam about 3 inches thick. The subsurface layer is dark yellowish brown, friable sandy loam 3 inches thick. The subsoil is yellowish brown, friable sandy loam and gravelly sandy clay loam 39 inches thick. The substratum is strong brown and yellowish brown, loose gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Laidig and Vanderlip soils. Also included are a few small areas of Morrison soils where stones cover more than 15 percent of the surface and a few areas of exposed limestone bedrock. Included areas make up 5 to 25 percent of the unit.

The permeability of this Morrison soil is moderate to moderately rapid. Runoff is very rapid. The root zone is more than 60 inches thick. In unlimed areas the soil is very strongly acid and strongly acid in the upper part and strongly acid and medium acid in the lower part.

Slope and the stones on the surface make this soil generally unsuitable for farming and are the main limitations for most types of community development. Most areas are wooded, and the soil is suitable for trees. The potential for woodland is moderately high, but slope limits the use of equipment for timber harvesting and maintenance.

The capability subclass is VIIs; woodland ordination symbol 3r.

MuB—Murrill gravelly silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on foot slopes in valleys. The areas are irregular in shape and range from about 2 to 175 acres.

Typically, the surface layer is dark yellowish brown, friable gravelly silt loam about 10 inches thick. The subsoil extends to a depth of 60 inches or more. It is strong brown, friable gravelly light silty clay loam and gravelly clay loam to a depth of 31 inches and yellowish red and brown, friable gravelly sandy clay loam at a depth of more than 31 inches.

Included with this soil in mapping are small areas of Morrison, Laidig, Edom, Hublersburg, Opequon, and Buchanan soils. Also included are areas of Murrill soils with a cobbly surface layer. Included soils make up 5 to 15 percent of the unit.

The permeability of this Murrill soil is moderate, and the available water capacity is high. Runoff is medium, and the erosion hazard is moderate. In unlimed areas the soil is very strongly acid to medium acid throughout. The root zone is 60 inches thick or more.

Most areas of this soil are farmed. Some small areas are wooded or used for community development.

This soil is suited to cultivated crops, but rock fragments in the soil restrict some planting operations. Stripcropping, minimum tillage, using cover crops, and incorporating residue into the soil help to control erosion.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain the desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is moderately high. Machine planting is practical on large areas.

The main limitation of the soil for community development is a hazard of ground-water contamination in areas used for onsite waste disposal. The rock fragments in the soil limit lawns and landscaping.

The capability subclass is IIe; woodland ordination symbol 3o.

MuC—Murrill gravelly silt loam, 8 to 15 percent slopes. This soil is sloping, deep, and well drained. It is on foot slopes in valleys. The areas are irregular in shape and range from about 2 to 85 acres.

Typically, the surface layer is dark yellowish brown, friable gravelly silt loam about 8 inches thick. The subsoil extends to a depth of 60 inches or more. It is strong brown, friable gravelly light silty clay loam and gravelly clay loam to a depth of 29 inches and yellowish red and brown, friable gravelly sandy clay loam at a depth of more than 29 inches.

Included with this soil in mapping are small areas of the Morrison, Laidig, Edom, Hublersburg, Opequon, and Buchanan soils. Also included are areas of Murrill soils with a cobbly surface layer. Included soils make up 5 to 15 percent of the unit.

The permeability of this Murrill soil is moderate, and the available water capacity is high. Runoff is rapid, and the erosion hazard is severe. In unlimed areas this soil is very strongly acid to medium acid throughout. The root zone is 60 inches thick or more.

Most areas of this soil are farmed. A few small areas are wooded or used for community development.

This soil is suited to cultivated crops, but the severe erosion hazard is a major management concern. Stripcropping, minimum tillage, using cover crops and grasses and legumes in the cropping system, and incorporating crop residue into the soil help to control erosion. Rock fragments in the soil interfere with some planting and harvesting operations.

The soil is suited to pasture. Use of proper socking rates and rotation of pastures help to maintain tilth and the desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is moderately high. Machine planting is practical on large areas.

Slope and rock fragments in the soil are the main limitations for community development. Slope restricts use of the soil for onsite waste disposal, and the rock fragments hinder landscaping and the establishment of lawns. Ground-water pollution is a hazard in areas of this soil used for onsite waste disposal.

The capability subclass is IIIe; woodland ordination symbol 3o.

MuD—Murrill gravelly silt loam, 15 to 25 percent slopes. This soil is moderately steep, deep, and well drained. It is on foot slopes in valleys. The areas are irregular in shape and range from about 2 to 160 acres.

Typically, the surface layer is dark yellowish brown, friable gravelly silt loam about 8 inches thick. The subsoil extends to a depth of 60 inches or more. It is strong brown, friable gravelly light silty clay loam and gravelly clay loam to a depth of 29 inches and yellowish red and brown, friable gravelly sandy clay loam at a depth of more than 29 inches.

Included with this soil in mapping are small areas of Morrison, Laidig, Edom, Hublersburg, Opequon, and Buchanan soils. Also included are areas of Murrill soils with a cobbly surface layer. Included soils make up 5 to 15 percent of the unit.

The permeability of this Murrill soil is moderate, and the available water capacity is high. Runoff is very rapid, and the erosion hazard is very severe. In unlimed areas the soil is very strongly acid to medium acid throughout. The root zone is 60 inches thick or more.

Most areas of this soil are farmed. A few areas are wooded or used for community developent.

This soil is suited to cultivated crops, but the very severe erosion hazard is a major management concern. Stripcropping, minimum tillage, using cover crops and grasses and legumes in the cropping system, using grassed waterways and diversions, and incorporating crop residue into the soil help to reduce erosion.

This soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain the desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is moderately high. Slope limits the use of timber harvesting equipment and interferes with machine planting of seedlings.

Slope and the rock fragments in the soil are the main limitations for community development. Slope limits the soil for onsite sewage disposal and as a building site and, along with the rock fragments, is a limitation for lawns and landscaping.

The capability subclass is IVe; woodland ordination symbol 3r.

MxB—Murrill extremely stony silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and well drained. It is on foot slopes in valleys. The areas are irregular in shape and range from about 2 to 20 acres. Stones that are 10 to 36 inches in diameter cover 15 to 50 percent of the surface.

Typically, the surface layer is very dark grayish brown, friable gravelly silt loam about 4 inches thick. The subsurface layer is brown, friable gravelly silt loam 7 inches thick. The subsoil extends to a depth of 60 inches or more. It is strong brown, friable gravelly light silty clay loam and gravelly clay loam to a depth of 32 inches and yellowish red and brown, friable gravelly sandy clay loam at a depth of more than 32 inches.

Included with this soil in mapping are small areas of Morrison, Laidig, Edom, Opequon, and Buchanan soils. Included soils make up 5 to 20 percent of the unit.

The permeability of this Murrill soil is moderate, and the available water capacity is high. Runoff is medium. In unlimed areas the soil is very strongly acid to medium acid throughout. The root zone is 60 inches thick or more.

Most areas of this soil are wooded. A few small areas are used for community development.

The stones on the surface prevent the use of tillage equipment and make the soil generally unsuitable for farming. This soil is suited to trees. The potential for woodland is moderately high, but the stones on the surface also interfere with the use of equipment for maintenance, harvesting, and planting.

The stones on the surface are the main limitation of the soil for community development, especially for onsite waste disposal, excavations, and lawns and landscaping.

The capability subclass is VIIs; woodland ordination symbol 3x.

MxD—Murrill extremely stony silt loam, 8 to 25 percent slopes. This soil is sloping and moderately steep, deep, and well drained. It is on foot slopes in valleys. Areas are irregular in shape and range from about 2 to 175 acres. Stones that are 10 to 36 inches in diameter cover 15 to 50 percent of the surface.

Typically, the surface layer is very dark grayish brown, friable gravelly silt loam about 4 inches thick. The subsurface layer is brown, friable gravelly silt loam 7 inches thick. The subsoil extends to a depth of 60 inches or more. It is strong brown, friable gravelly light silty clay loam and gravelly clay loam to a depth of 32 inches and yellowish red and brown, friable gravelly sandy clay loam at a depth of more than 32 inches.

Included with this soil in mapping are small areas of Morrison, Laidig, Edom, Opequon, and Buchanan soils. Included soils make up 5 to 20 percent of the unit.

The permeability of this Murrill soil is moderate, and the available water capacity is high. Runoff is medium. In unlimed areas the soil is very strongly acid to medium acid throughout. The root zone is 60 inches thick or more.

Most areas of this soil are wooded. A few small areas are used for community development.

The stones on the surface interfere with the use of tillage equipment and make the soil generally unsuitable for farming. The soil is suited to trees. The potential for woodland is moderately high, but slope and the stones on the surface also restrict the use of equipment for maintenance, harvesting, and planting. Constructing roads on the contour of the landscape reduces erosion during timber harvesting.

Slope and the stones on the surface limit the soil for community development, especially for onsite waste disposal and as a building site.

The capability subclass is VIIs; woodland ordination symbol 3x.

OuC—Opequon silty clay loam, 5 to 15 percent slopes. This soil is gently sloping and sloping, shallow, and well drained. It is in upland valleys. Areas are irregular in shape and range from about 2 to 140 acres.

Typically, the surface layer is dark brown, friable silty clay loam about 8 inches thick. The subsoil is yellowish red, friable silty clay 8 inches thick. Limestone bedrock is at a depth of 16 inches.

Included with this soil in mapping are small areas of Hublersburg, Edom, Murrill, Buchanan, Clarksburg, and Wharton Variant soils. Also included are areas of a soil similar to this Opequon soil but that has bedrock at a depth of 20 to 30 inches or that has a surface layer of silt loam. Included soils make up 5 to 15 percent of the unit.

The permeability of this Opequon soil is moderate to moderately slow, and the available water capacity is low. Surface runoff is medium to rapid, and the erosion hazard is severe. The root zone is 10 to 20 inches thick. In unlimed areas the soil is slightly acid and neutral throughout.

Most areas of this soil are farmed. A few areas are wooded or used for community development.

This soil is suited to cultivated crops, but the severe erosion hazard is a major management concern. Stripcropping, minimum tillage, using cover crops, and using grassed waterways help to control runoff and reduce erosion. The shallow root zone and low available water are limitations in years of low rainfall. Incorporating crop residue and manure into the soil helps to improve tilth.

The soil is suited to pasture. Use of proper stocking rates and rotation of pastures help to maintain the desirable pasture plant species.

This soil is well suited to trees, and the potential for woodland is moderately high. The low available water capacity of the soil commonly causes a high rate of seedling mortality. Machine planting of seedlings is practical on large areas. Erosion control during timber harvesting is a major management concern.

The shallow depth to bedrock is the main limitation of the soil for community development, especially for onsite

waste disposal and as a site for buildings with basements.

The capability subclass is IIIe; woodland ordination symbol 3c.

OuD—Opequon silty clay loam, 15 to 25 percent slopes. This soil is moderately steep, shallow, and well drained. It is in valleys. Areas are irregular in shape and range from about 2 to 68 acres.

Typically the surface layer is dark brown, friable silty clay loam about 6 inches thick. The subsoil is yellowish red, friable silty clay 8 inches thick. Limestone bedrock is at a depth of 14 inches.

Included with this soil in mapping are small areas of Hublersburg, Edom, Murrill, Buchanan, Clarksburg, and Wharton Variant soils. Also included are a few areas of a soil similar to this Opequon soil but that is less than 10 inches deep to bedrock. Included soils make up 5 to 15 percent of the unit.

The permeability of this Opequon soil is moderate to moderately slow, and the available water capacity is low. Surface runoff is rapid, and the erosion hazard is very severe. The root zone is 10 to 20 inches thick. In unlimed areas the soil is slightly acid and neutral throughout.

Most areas of this soil are farmed. A few areas are wooded or used for community development.

This soil is suited to cultivated crops, but the very severe erosion hazard, shallow root zone, and low available water capacity are major management limitations. Minimum tillage, stripcropping, using cover crops, and using grassed waterways and diversion terraces help to control runoff and reduce erosion. The shallow root zone and low available water especially limit the soil for crops in years of low rainfall. Incorporating crop residue and manure into the soil and using crop rotations that include grasses and legumes help to improve and maintain tilth.

The soil is suited to pasture. Use of proper stocking rates and pasture rotation help to maintain the desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is moderately high. Slope limits the use of harvesting and planting equipment, and the seedling mortality rate is often high because of the low available water capacity.

Slope and the shallow depth to bedrock are the main limitations of the soil for community development, especially for onsite waste disposal and as a site for buildings with basements.

The capability subclass is IVe; woodland ordination symbol 3c.

OxF—Opequon-Hagerstown-Rock outcrop complex, 25 to 50 percent slopes. This unit consists of steep, well drained soils and areas of exposed bedrock that are so intermingled that it was not practical to map them separately. The unit is about 40 percent shallow Opequon soils, 30 percent deep Hagerstown soils, 20 percent exposed bedrock, and 10 percent other soils. Areas of the unit are irregular in shape and range from about 5 to 150 acres.

Typically, the surface layer of the Opequon soil is dark brown, friable silty clay loam about 3 inches thick. The subsoil is yellowish red, friable silty clay 13 inches thick. Limestone bedrock is at a depth of 16 inches.

Typically, the surface layer of the Hagerstown soil is dark grayish brown, friable silty clay loam about 3 inches thick. The subsoil extends to a depth of 60 inches. It is yellowish red, friable silty clay to a depth of 24 inches and yellowish red, friable silty clay loam at a depth of more than 24 inches. Limestone bedrock is at a depth of 60 inches.

Included with these soils in mapping are small areas of Hublersburg, Clarksburg, Lobdell, and Holly soils and Udifluvents and Dystrochrepts. Also included are areas of a soil similar to this Opequon soil that has bedrock at a depth of less than 10 inches or that has a surface layer of silt loam.

The permeability of this Opequon soil is moderate to moderately slow, and the available water capacity is low. Surface runoff is rapid, and the erosion hazard is very severe. The root zone is limited by bedrock at a depth of 10 to 20 inches. The soil is slightly acid and neutral throughout.

The permeability of this Hagerstown soil is moderate, and the available water capacity is high. Surface runoff is rapid, and the erosion hazard is very severe. The root zone is 60 inches thick. Unless limed, the soil is very strongly acid and strongly acid in the upper part and strongly acid through neutral in the lower part.

Slope, the areas of exposed bedrock, and the shallow depth to bedrock in the Opequon soil make these soils generally unsuitable for farming and are the main limitations for community development.

Most areas of the soil are wooded, and the soils are suited to trees. The potential for woodland is moderately high for the Opequon soil and very high for the Hagerstown soil, but slope interferes with the use of equipment. Erosion is a major management concern during timber harvesting.

The capability subclass is VIe; woodland ordination symbol 3c for the Opequon part, 1c for the Hagerstown part.

Pt—Pits-Dumps complex. This unit mainly consists of areas that have been excavated and areas of unused material from these excavations. The excavations make up about 50 percent of the unit, the unused material about 25 percent, and other areas about 25 percent. The areas of excavations and unused material are so intermingled that it was not practical to map them separately. Slopes in these areas range from about 5 to 70 percent. The thickness of the unused material ranges from 2 to 50 feet or more.

Included with this unit in mapping are small areas of water and Vanderlip, Morrison, Laidig, and Buchanan soils.

Areas of this unit are either without vegetation or have a sparse covering of grass, shrubs, or trees. Some areas of the unit are suitable for wildlife habitat or recreation, but the variability of characteristics in the unit make onsite investigation necessary to determine the potential for most uses.

This unit is not assigned to a capability subclass or woodland ordination group.

Pu—Purdy silt loam. This soil is nearly level, deep, and poorly drained. It is on stream terraces. Slopes are smooth or slightly undulating. The areas range from 2 to 200 acres.

Typically, the surface layer is black, friable silt loam about 3 inches thick. The subsoil is mottled and gray and is 31 inches thick. It is friable silty clay loam in the upper 9 inches and friable and firm silty clay in the lower 22 inches. The substratum is mottled, gray, firm cobbly silty clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Monongahela, Barbour, Basher, Atkins, Melvin, and Tyler soils. Included soils make up 5 to 15 percent of the unit.

The permeability of this Purdy soil is slow, and the available water capacity is high. Runoff is slow, and the erosion hazard is slight. This soil has a high water table between the surface and a depth of 6 inches. The root zone is generally 60 inches thick, but root growth is restricted in some areas by the high water table. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are used for pasture and hay. A few areas are used for community development.

This soil is suited to cultivated crops, but the high water table interferes with timely tillage and planting operations. Subsurface drainage helps increase the suitability for crops in areas where outlets are available.

The soil is suitable for pasture, but water-tolerant grasses and legumes are needed in undrained areas. Grazing when the soil is wet compacts the surface layer and damages plant stands. Use of proper stocking rates, pasture rotation, and deferment of grazing during wet periods help to maintain tilth and the desirable pasture plant species.

This soil is suitable for trees, and the potential for woodland is very high. The high water table interferes with the use of harvesting equipment.

The high water table and slow permeability of the soil are the main limitations for community development, especially for onsite waste disposal and as a site for buildings.

The capability subclass is IVw; woodland ordination symbol 1w.

Qu—Quarries-Dumps complex. This unit mainly consists of areas of rock-walled excavations and areas of unused material from these excavations. The unit is about 50 percent excavated areas, 25 percent unused material, and 25 percent other areas. The areas of excavations and unused material are so intermingled that it was not practical to map them separately. Slopes range from 5 to 90 percent. The thickness of the unused material ranges from 20 to 50 feet.

Included with this unit in mapping are small areas of water and Hazleton, Laidig, Berks, Weikert, Opequon, Clarksburg, Ernest, Lobdell, and Brinkerton soils.

Areas of this unit are either without vegetation or sparsely covered with plants and trees. Slope and stones in and on the areas are the main limitations for most uses. Some areas are suitable for recreation or wildlife habitat, but the variability of characteristics in this unit makes onsite investigation necessary to determine the potential for most uses.

This unit is not assigned to a capability subclass or woodland ordination group.

Ty—Tyler silt loam. This soil is nearly level, deep, and somewhat poorly drained. It is on stream terraces. Areas are irregular in shape and range from 2 to 95 acres.

Typically, the surface layer is dark gray, friable silt loam about 7 inches thick. The subsoil is mottled and yellowish brown and gray and is 41 inches thick. It is friable light silty clay loam in the upper 13 inches and very firm and brittle light silty clay loam and clay loam in the lower 28 inches. The substratum is mottled, yellowish brown, firm silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Purdy, Monongahela, Barbour, Basher, Atkins, Melvin, and Lindside soils. Also included are areas of a soil similar to this Tyler soil but that has cobblestones and stone fragments in the subsoil. Included soils make up 5 to 20 percent of the unit.

The permeability of this Tyler soil is slow, and the available water capacity is moderate. The root zone is restricted by the firm and brittle part of the subsoil and by a seasonal high water table at a depth of 6 to 18 inches. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are used for pasture. A few areas are wooded or used for community development.

This soil is suited to cultivated crops, but the seasonal high water table delays timely tillage and planting operations in some areas. Subsurface drainage helps to improve suitability for crops in areas where outlets are available. Using cover crops and incorporating crop residue and manure into the soil help to maintain the organic matter content.

This soil is suited to pasture, but water-tolerant grasses and legumes are needed in undrained areas. Grazing when the soil is too wet causes surface compaction, increases runoff, and damages plant stands. Use of proper stocking rates, pasture rotation, and

deferment of grazing during wet periods help to maintain tilth and the desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is high. The seasonal high water table delays harvesting during wet periods, however, and the rooting depth is restricted by the firm and brittle part of the subsoil.

The seasonal high water table and slow permeability of the soil are the main limitations for community development, especially for onsite waste disposal and as a building site.

The capability subclass is IIIw; woodland ordination symbol 2w.

UD—Udifluvents-Dystrochrepts complex. This unit consists of nearly level, deep, somewhat poorly drained to excessively drained soils on flood plains. The unit is about 50 percent Udifluvents, 30 percent Dystrochrepts, and 20 percent other soils. The Udifluvents and Dystrochrepts are so intermingled that it was not practical to map them separately. The areas of the unit are long and moderately wide and range from 2 to 150 acres.

The surface layer of the Udifluvents generally consists of reddish brown to dark yellowish brown silt loam, loam, and sandy loam 2 to 10 inches thick. The substratum is dark reddish brown to yellowish brown gravelly and cobbly loam and sand to a depth of 60 inches or more.

The surface layer of the Dystrochrepts generally is reddish brown gravelly loam to sandy loam and is about 9 inches thick. The subsoil is dark reddish brown or dark brown, friable gravelly loam to sandy loam 10 to 50 inches thick. The substratum, at a depth of more than 60 inches, is gravelly loam to cobbly loamy sand. In some areas these soils are mottled at a depth of more than 12 inches.

Included with these soils in mapping are small areas of Basher, Linden, Lobdell, and Holly soils on adjoining flood plains and Berks, Leck Kill, Meckesville, Albrights, Brinkerton, Ernest, and Opequon soils on uplands. Also included are areas of very stony soils and areas with deposits of organic material on the surface.

The permeability of the Udifluvents and Dystrochrepts is moderate to rapid, and the available water capacity is variable. Runoff is slow. The erosion hazard is slight. In unlimed areas the soils are strongly acid to neutral throughout.

Most areas of these soils are farmed or wooded. A few areas are used for community development.

A hazard of flooding, the low available water capacity, and stone fragments in the soil make these soils generally unsuitable for cultivated crops. The soils are suited to pasture. Use of proper stocking rates and rotation of pastures help to maintain the desirable plant species.

These soils are suited to trees, but the potential for woodland is variable. Flooding and stone fragments in the soil limit productivity.

The hazard of flooding and the moderate to rapid permeability are the main limitations of these soils for community development, especially for onsite waste disposal and as a building site.

This unit is not assigned to a capability subclass or woodland ordination group.

US—Udorthents, strip mine. This unit consists of areas of material that was excavated during strip mining operations. The material consists of soil mixed with shale and sandstone rock fragments and is more than 30 inches thick. Slopes range from gently sloping to very steep. The areas range from about 2 to 550 acres and are in the western part of the county.

Udorthents are about 40 to 80 percent rock fragments. The soil material is dark brown to olive yellow loam to silty clay loam. It is extremely acid to strongly acid.

Included with this unit in mapping are areas of Clymer, Laidig, Gilpin, Wharton, and Cavode soils and Udifluvents and Dystrochrepts. Included soils make up 5 to 20 percent of the unit.

Some areas of these soils are covered with trees and grasses. Some areas are suitable for recreation or wildlife habitat, but the characteristics of the unit are so variable that onsite investigation is needed to determine the potential for most uses.

This unit is not assigned to a capability subclass or woodland ordination group.

Ux—Urban land. This unit consists of areas where roads, railroads, parking lots, buildings, and other structures cover 85 percent or more of the surface. These areas are throughout the county, but the most extensive areas are in downtown Altoona and in the railroad yards in Hollidaysburg. The areas are dominantly nearly level but range to moderately steep. Areas are irregular in shape and range from about 2 to 155 acres.

Included with this unit in mapping are areas of fill and small areas of Berks, Basher, Holly, Barbour, Tyler, Purdy, and Monongahela soils.

Onsite investigation is needed to determine the suitability and limitations of this unit for most uses.

This unit is not assigned to a capability subclass or woodland ordination group.

UYB—Urban land-Berks complex, 0 to 8 percent slopes. This unit consists of areas covered by houses, roads, and other structures and areas of moderately deep, well drained Berks soil. These areas are so intermingled that it was not practical to map them separately. The unit is about 55 percent urbanized areas, 20 percent Berks soil, and 25 percent other soils. The areas of the unit are on nearly level and gently sloping ridges in the western part of the county and range from about 2 to 85 acres.

Typically, the surface layer of the Berks soil is dark brown, friable channery silt loam about 8 inches thick. The subsoil is brown, friable channery and shaly silt loam

17 inches thick. The substratum is yellowish brown, firm very shaly silt loam 4 inches thick. Shale bedrock is at a depth of 29 inches.

Included with this unit in mapping are areas of Weikert, Ernest, Blairton, Brinkerton, and Purdy soils. Also included are areas covered with fill material 20 inches thick or more.

The permeability of this Berks soil is moderate to moderately rapid. Runoff is medium, and the erosion hazard is moderate. The available water capacity is low. The soil is generally strongly acid and very strongly acid throughout in unlimed areas.

The Berks part of this unit is in narrow areas between sidewalks, in lawns, and in a few vacant lots. Most of the areas are less than 800 square feet.

The suitability of this unit for lawns and landscaping is generally poor because of stone fragments in and on the soil, the depth to bedrock, and the low available water capacity. An onsite investigation is needed, however, to determine the suitability and limitations of the unit for most uses.

This unit is not assigned to a capability subclass; the woodland ordination group is 3f for the Berks part, not assigned for the Urban land part.

UYD—Urban land-Berks complex, 8 to 25 percent slopes. This unit consists of areas covered by houses, roads, and other structures and areas of moderately deep, well drained Berks soil. These areas are so intermingled that it was not practical to map them separately. The unit is about 55 percent urbanized areas, 20 percent Berks soil, and 25 percent other soils. The areas of the unit are on sloping and moderately steep ridges in the western part of the county and range from about 2 to 95 acres.

Typically, the surface layer of the Berks soil is dark brown, friable channery silt loam about 8 inches thick. The subsoil is brown, friable channery and shaly silt loam 17 inches thick. The substratum is yellowish brown, firm very shaly silt loam 4 inches thick. Shale bedrock is at a depth of 29 inches.

Included with this unit in mapping are areas of Weikert, Ernest, Blairton, Brinkerton, and Purdy soils. Also included are areas covered with fill material 20 inches thick or more.

The permeability of this Berks soil is moderate to moderately rapid. Runoff is medium to rapid, and the erosion hazard is severe. The available water capacity is low. The soil is generally strongly acid and very strongly acid throughout in unlimed areas.

The Berks part of this unit is in narrow areas between sidewalks, in lawns, and in a few vacant lots. Most areas are less than 800 square feet.

The suitability of this unit for lawns and landscaping is generally poor because of stone fragments in and on the soil, the depth to bedrock, and the low available water capacity. An onsite investigation is needed, however, to determine the suitability and limitations of the unit for most uses.

This unit is not assigned to a capability subclass; the woodland ordination group is 3f for the Berks part, not assigned for the Urban land part.

UZB—Urban land-Edom complex, 0 to 8 percent slopes. This map unit consists of areas covered by houses, roads, and other structures and areas of deep, well drained Edom soils. The areas are so intermingled that it was not practical to map them separately. The unit is about 55 percent urban areas, 20 percent Edom soils, and 25 percent other soils. The areas are on nearly level and gently sloping ridges mostly in eastern Altoona, and they range from about 2 to 225 acres.

Typically, the surface layer of the Edom soil is dark grayish brown, friable silty clay loam about 9 inches thick. The subsoil is brown, friable silty clay loam and silty clay 15 inches thick. The substratum is reddish brown, friable very shaly silty clay 18 inches thick. Limestone bedrock is at a depth of 42 inches.

Included with this unit in mapping are areas of Murrill, Weikert, Opequon, Clarksburg, and Wharton Variant soils. Also included are areas covered with fill material 20 inches thick or more.

The permeability of the Edom soil is moderately slow to moderate. Runoff is medium, and the erosion hazard is moderate. The available water capacity is moderate. The soil is slightly acid and neutral throughout in unlimed areas.

The Edom part of this unit is in narrow areas between sidewalks, in lawns, and in a few vacant lots. Most areas are less than 800 square feet.

The depth to bedrock in the Edom soil limits this unit for community development and other uses. An onsite investigation is needed, however, to determine the suitability and limitations of this unit for most uses.

This unit is not assigned to a capability subclass; the woodland ordination symbol is 2o for the Edom soils and not assigned for Urban land.

UZD—Urban land-Edom complex, 8 to 25 percent slopes. This unit consists of areas covered by houses, roads, and other structures and areas of deep, well drained Edom soils. These areas are so intermingled that it was not practical to map them separately. The unit is about 55 percent urbanized areas, 20 percent Edom soils, and 25 percent other soils. The areas of the unit are on sloping and moderately steep ridges mostly in eastern Altoona, and they range from about 2 to 200 acres.

Typically, the surface layer is dark grayish brown, friable silty clay loam about 9 inches thick. The subsoil is brown, friable silty clay loam and silty clay 15 inches thick. The substratum is reddish brown, friable very shaly silty clay 18 inches thick. Limestone bedrock is at a depth of 42 inches.

Included with this unit in mapping are areas of Murrill, Weikert, Opequon, Clarksburg, and Wharton Variant soils. Also included are areas covered with fill material 20 inches thick or more.

The permeability of the Edom soil is moderately slow to moderate. Runoff is medium to rapid, and the erosion hazard is severe. The available water capacity is moderate. The soil is slightly acid and neutral throughout in unlimed areas.

The Edom part of this complex is in narrow areas between sidewalks, in lawns, and in a few vacant lots. Most areas are less than 800 square feet.

The depth to bedrock in the Edom soil limits this unit for community development and other uses. An onsite investigation is needed, however, to determine the suitability and limitations of the unit for most uses.

This unit is not assigned to a capability subclass; the woodland ordination symbol is 2r for the Edom part, unassigned for the Urban land part.

VaC—Vanderlip loamy sand, 3 to 25 percent slopes. This soil is gently sloping to moderately steep, deep, and well drained. It is on narrow ridgetops and side slopes on uplands. Areas are irregular in shape and range from 2 to 60 acres.

Typically, the surface layer is very dark gray, very friable loamy sand about 2 inches thick. The subsurface layer is dark yellowish brown, very friable loamy sand 15 inches thick. The subsoil extends to a depth of 60 inches or more. It is yellowish brown, loose loamy sand to a depth of 28 inches and brownish yellow, loose sand at a depth of more than 28 inches.

Included with this soil in mapping are small areas of Mertz, Morrison, Hublersburg, and Berks soils. Also included are a few areas of Vanderlip soils that are very stony. Included soils make up 5 to 10 percent of the unit.

The permeability of this Vanderlip soil is rapid, and the available water capacity is very low. The root zone extends to a depth of 5 feet or more. Runoff is medium to rapid, and the erosion hazard is moderate to very severe. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are wooded or are used as a source of building sand.

Slope and the very low available water capacity make this soil generally unsuitable for cultivated crops. The very low available water capacity also makes the soil poorly suited to pasture, especially during dry periods. Use of proper stocking rates and pasture rotation help to maintain the desirable pasture plants.

This soil is suited to trees, and the potential for woodland is moderate. Slope is a limitation for equipment operation. Erosion can be reduced during harvesting by constructing access roads on the contour of the landscape.

Slope and the rapid permeability are the main limitations of the soil for community development, especially for onsite waste disposal and as a building site.

The capability subclass is IVs; woodland ordination symbol 4s.

VdD—Vanderlip very stony loamy sand, 3 to 25 percent slopes. This soil is gently sloping to moderately steep, deep, and well drained. It is on narrow ridgetops and side slopes on uplands. Areas are irregular in shape and range from 2 to 48 acres. Stones that are 10 to 36 inches in diameter cover 3 to 15 percent of the surface.

Typically, the surface layer is very dark gray, very friable loamy sand about 2 inches thick. The subsurface layer is dark yellowish brown, very friable loamy sand 15 inches thick. The subsoil extends to a depth of 60 inches or more. It is yellowish brown, loose loamy sand to a depth of 28 inches and brownish yellow, loose sand at a depth of more than 28 inches.

Included with this soil in mapping are small areas of Morrison soils that make up 5 to 10 percent of the unit.

The permeability of this Vanderlip soil is rapid, and the available water capacity is very low. The root zone extends to a depth of 5 feet or more. Runoff is medium to rapid. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are wooded or are used as a source of building sand.

Slope, the very low available water capacity, and the stones on the surface make the soil generally unsuitable for farming. The soil is suited to trees, however, and the potential for woodland is moderate. In places, slope interferes with use of equipment. Erosion can be reduced during timber harvesting by constructing access roads on the contour of the landscape.

Slope, the stones on the surface, and the rapid permeability limit the soil for community development. They especially limit the soil for onsite waste disposal and as a building site, and the slope and stones hinder the establishment of lawns and landscaping.

The capability subclass is VIs; woodland ordination symbol 4s.

WeB—Weikert channery silt loam, 3 to 8 percent slopes. This soil is gently sloping, shallow, and well drained. It is on narrow side slopes and tops of ridges. Areas are irregular in shape and range from 2 to 70 acres.

Typically, the surface layer is dark brown, very friable channery silt loam about 6 inches thick. The subsoil is yellowish brown, very friable shaly silt loam 4 inches thick. The substratum is yellowish brown, friable very shaly silt loam 4 inches thick. Shale bedrock is at a depth of 14 inches.

Included with this soil in mapping are small areas of Berks, Bedington, Gilpin, and Edom soils. Also included are a few areas of soils similar to this Weikert soil but that have more clay. Included soils make up 5 to 20 percent of the unit.

The permeability of this Weikert soil is moderately rapid, and the available water capacity is very low. Runoff is medium, and the erosion hazard is severe. The root zone is restricted by bedrock at a depth of 12 to 20 inches. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are farmed. A few areas are wooded or used for community development.

This soil is suited to pasture and cultivated crops, but the very low available water capacity is a major limitation. Minimum tillage, stripcropping, using cover crops, and incorporating crop residue into the soil help to control runoff and reduce erosion in cultivated areas. Use of proper stocking rates and pasture rotation help to maintain desirable pasture plant species.

The soil is suited to trees, and the potential for woodland is moderate. The very low available water capacity causes a high rate of seedling mortality.

The shallow depth to bedrock, the very low available water capacity, and stone fragments in the soil are the major limitations for community development. The depth to bedrock especially limits the soil for onsite waste disposal and as a building site. The stone fragments and available water capacity limit landscaping and the establishment of lawns.

The capability subclass is IIIe; woodland ordination symbol 4d.

WeC—Weikert channery silt loam, 8 to 15 percent slopes. This soil is sloping, shallow, and well drained. It is on narrow side slopes and tops of ridges. Areas are irregular in shape and range from 2 to 120 acres.

Typically, the surface layer is dark brown, very friable channery silt loam about 6 inches thick. The subsoil is yellowish brown, very friable shaly silt loam 4 inches thick. The substratum is yellowish brown, friable very shaly silt loam 4 inches thick. Shale bedrock is at a depth of 14 inches.

Included with this soil in mapping are small areas of Berks, Bedington, Gilpin, and Edom soils. Also included are a few areas of a soil similar to the Weikert soil but that has more clay. Included soils make up 5 to 20 percent of the unit.

The permeability of this Weikert soil is moderately rapid, and the available water capacity is very low. Runoff is rapid, and the erosion hazard is very severe. The root zone is restricted by bedrock at a depth of 12 to 20 inches. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are farmed. A few areas are wooded or used for community development.

The very low available water capacity and very severe erosion hazard make this soil poorly suited to cultivated crops. Stripcropping, minimum tillage, using cover crops and diversion terraces, and incorporating crop residue into the soil help to control runoff and reduce erosion.

This soil is suited to pasture, but the very low available water capacity is a major concern, especially in dry years. Use of proper stocking rates and pasture rotation help to maintain the desirable pasture plant species.

The soil is suited to trees, and the potential for woodland is moderate. The very low available water capacity of the soil causes a high rate of seedling mortality.

The shallow depth to bedrock, the very low available water capacity, slope, and stone fragments in the soil are the major limitations for community development. The depth to bedrock especially limits the soil for onsite waste disposal and as a building site. The stone fragments, available water capacity, and slope limit landscaping and the establishment of lawns.

The capability subclass is IVe; woodland ordination symbol 4d.

WeD—Weikert channery silt loam, 15 to 25 percent slopes. This soil is moderately steep, shallow, and well drained. It is on narrow side slopes of upland ridges. Areas are irregular in shape and range from 2 to 90 acres.

Typically, the surface layer is dark brown, very friable channery silt loam about 6 inches thick. The subsoil is yellowish brown, very friable shaly silt loam 4 inches thick. The substratum is yellowish brown, friable very shaly silt loam 4 inches thick. Shale bedrock is at a depth of 14 inches.

Included with this soil in mapping are small areas of Berks, Bedington, Gilpin, and Edom soils. Also included are a few areas of a soil similar to this Weikert soil but that has more clay. Included soils make up 5 to 20 percent of the unit.

The permeability of this Weikert soil is moderately rapid, and the available water capacity is very low. Runoff is very rapid, and the erosion hazard is very severe. The root zone is restricted by bedrock at a depth of 12 to 20 inches. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are used for pasture or woodland. A few are used for community development.

Slope, the shallow rooting depth, and the very low available water capacity make this soil generally unsuitable for farming. The soil is suited to trees, and the potential for woodland is moderate. However, the very low available water capacity causes a high rate of seedling mortality and the slope restricts the use of equipment.

Slope, the depth to bedrock, the very low available water capacity, and stone fragments in the soil are the main limitations for community development. Slope and the depth to bedrock especially limit the soil for onsite waste disposal; the slope, very low available water capacity, and stone fragments hinder landscaping and the establishment of lawns.

The capability subclass is VIe; woodland ordination symbol 4d.

WhB—Wharton silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and moderately well drained. It is on narrow to moderately broad side slopes of ridges. Areas are irregular in shape and range from 2 to 50 acres.

Typically, the surface layer is dark grayish brown, friable silt loam about 8 inches thick. The subsoil is 33

inches thick. It is yellowish brown, friable silty clay loam that is mottled in the lower part. The substratum is yellowish brown and strong brown, firm very shaly heavy silt loam 37 inches thick. Shale bedrock is at a depth of 78 inches.

Included with this soil in mapping are small areas of Cavode, Brinkerton, Ernest, Gilpin, and Weikert soils. Also included are a few areas of very stony Wharton soils. Included soils make up 5 to 15 percent of the unit.

The permeability of this Wharton soil is moderately slow to slow, and the available water capacity is high. Runoff is medium, and the erosion hazard is moderate. The soil has a seasonal high water table at a depth of 18 to 36 inches that limits the rooting zone of some plants. In unlimed areas the soil is very strongly acid and strongly acid throughout.

Most areas of this soil are wooded or are in abandoned fields adjacent to strip mines.

This soil is suited to cultivated crops. The moderate hazard of erosion can be reduced by stripcropping, using cover crops and grassed waterways, and incorporating crop residue into the soil.

The soil is suited to pasture, but the seasonal high water table restricts some deep-rooted plants. Use of pasture rotation and proper stocking rates help to maintain the desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is high. Large areas are suitable for machine planting.

The seasonal high water table and the moderately slow to slow permeability are the main limitations of the soil for community development, especially for onsite waste disposal and as a building site.

The capability subclass is IIe; woodland ordination symbol 2o.

WhC—Wharton silt loam, 8 to 15 percent slopes. This soil is sloping, deep, and moderately well drained. It is on narrow to moderately broad side slopes of ridges. Areas are irregular in shape and range from 2 to 25 acres.

Typically, the surface layer is dark grayish brown, friable silt loam about 8 inches thick. The subsoil is 33 inches thick. It is yellowish brown, friable silty clay loam that is mottled in the lower part. The substratum is yellowish brown and strong brown, firm very shaly heavy silt loam 37 inches thick. Shale bedrock is at a depth of 78 inches.

Included with this soil in mapping are small areas of Cavode, Brinkerton, Ernest, Gilpin, and Weikert soils. Also included are a few areas of very stony Wharton soils. Included soils make up 5 to 15 percent of the unit.

The permeability of this Wharton soil is moderately slow to slow, and the available water capacity is high. Runoff is rapid, and the erosion hazard is severe. The soil has a seasonal high water table at a depth of 18 to 36 inches that limits the root zone of some plants. In unlimed areas the soil is strongly acid and very strongly acid throughout.

Most areas of this soil are wooded or are in abandoned fields adjacent to strip mines. A few small areas are used for farming or community development.

This soil is suited to cultivated crops, but the severe erosion hazard is a major management concern. Stripcropping, minimum tillage, using cover crops and grassed waterways, and incorporating crop residue into the soil help to control runoff and reduce erosion.

The soil is suited to pasture. The seasonal high water table restricts some deep-rooted plants. Use of pasture rotation and proper stocking rates help to maintain the desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is high. Erosion can be controlled during timber harvesting by constructing roads and trails on the contour of the landscape. Large areas of the soil are suitable for machine planting.

Slope, the seasonal high water table, and the moderately slow to slow permeability are the main limitations of the soil for community development, especially for onsite waste disposal and as a building site.

The capability subclass is IIIe; woodland ordination symbol 2r.

WvB—Wharton Variant silt loam, 3 to 8 percent slopes. This soil is gently sloping, deep, and somewhat poorly drained. It is on mountain foot slopes. Areas are irregular in shape and range from 2 to 70 acres.

Typically, the surface layer is dark brown, friable silt loam about 7 inches thick. The subsoil is silty clay loam 47 inches thick and is mottled in the lower part. The upper 17 inches is friable, and the lower 30 inches is very firm and brittle. The substratum is brown, firm channery clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Edom, Murrill, Opequon, and Buchanan soils. Also included are areas of soils similar to this Wharton Variant but that are poorly drained or in which the lower part of the subsoil is not so firm and brittle. Included soils make up 5 to 15 percent of the unit.

The permeability of this Wharton Variant soil is slow, and the available water capacity is moderate. Runoff is medium, and the erosion hazard is moderate. The rooting depth is restricted by the firm part of the subsoil and by a seasonal high water table at a depth of 6 to 18 inches. In unlimed areas the soil is strongly acid to neutral in the upper part and neutral to mildly alkaline in the lower part.

Most areas of this soil are farmed. A few small areas are wooded.

This soil is suited to cultivated crops, but the moderate erosion hazard is a management concern and the seasonal high water table limits timely soil preparation and planting. The use of subsurface drainage helps increase the suitability for crops where outlets are available. Stripcropping, minimum tillage, using cover crops, and incorporating crop residue into the soil help to reduce erosion.

The soil is suited to pasture, but water-tolerant grasses and legumes are needed. The soil becomes compacted if pastures are grazed when the soil is too wet. Use of proper stocking rates, pasture rotation, and deferment of grazing during wet periods help to maintain tilth and the desirable pasture plant species.

This soil is suited to trees, and the potential for woodland is moderately high. The seasonal high water table interferes with the use of equipment.

The seasonal high water table and slow permeability limit the soil for community development, especially for onsite waste disposal and as a building site.

The capability subclass is IIIw; woodland ordination symbol 3w.

use and management of the soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

crops and pasture

John C. Spitzer, agronomist, Soil Conservation Service, assisted with the preparation of this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed soil map units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

Farming is a major land use in Blair County. According to the Conservation Needs Inventory, 71,011 acres were used for crops and pasture in 1975. Of this total, 7,081 acres were used for permanent pasture. The 1976 Pennsylvania Crop and Livestock Annual Summary reported 15,200 acres of corn, 7,800 acres of small grain, 15,000 acres of alfalfa and other hay, 1,950 acres in orchards and vineyards, and the rest in cropland pasture, idle cropland, or other uses.

Soil erosion in these and other areas results in sediment deposition in streams and reservoirs and causes loss of productive topsoil. The loss of topsoil is especially critical on soils that are shallow or moderately deep to bedrock, soils with a restrictive layer, and soils with low available water capacity. Opequon, Weikert, and Berks soils, for example, are shallow to moderately deep and have low available water capacity. The Ernest, Brinkerton, and Clarksburg soils are examples of soils that have a restrictive layer.

In many sloping, channery and flaggy soils, preparing a good seedbed and tilling are difficult because the original surface layer has been eroded, leaving a high content of stone fragments on the surface. Such areas are common on Bedington channery silt loam and Leetonia flaggy loam.

Conservation and erosion-control practices provide protective cover, reduce surface water runoff and sedimentation, and increase infiltration. Cropping systems that maintain a plant cover help to protect the soils. Deferred grazing and the use of grasses and legumes on areas used for hay and pasture help to reduce erosion, provide nitrogen, and improve tilth. Contour farming, using terraces, minimum tillage, and cover crops, and incorporating crop residue into the soil help to increase infiltration and reduce erosion on cultivated areas. These practices are suited to most soils except those with steep and irregular slopes, which are not suitable for terraces.

Terraces and diversions reduce the length of slopes and result in reducing surface water runoff and erosion.

The use of terraces is practical on deep, well drained soils with moderate, uniform slopes. Edom, Laidig, and Leck Kill soils are generally suitable for terraces and diversions. Contour farming and stripcropping are also suited to soils with uniform slopes, such as the Edom, Buchanan, and Berks soils.

Soil drainage is a major management concern on many of the soils in Blair County. Some soils are so wet that crop production is not practical or economically feasible without artificial drainage. Examples are the poorly drained Brinkerton, Holly, and Purdy soils, which collectively comprise approximately 12,500 acres in the county.

The somewhat poorly drained soils are so wet that crop damage results during most years unless artificial drainage is used. In this category are Cavode and Wharton Variant soils. The total acreage of these soils is about 2,660 acres.

Some small, wet areas are in drainageways and swales. These small areas are generally within larger areas of moderately well drained Ernest and Wharton soils. Artificial drainage could improve the management and productivity of most of these small areas, but this may not be economically feasible.

The design of surface and subsurface drainage systems varies with the kind of soil. A combination of surface drainage and tile drainage is usually needed for poorly drained soils that are intensively farmed. Drains must be more closely spaced in the soils with slow permeability than in others that are more permeable. In addition, finding adequate outlets for tile drainage systems is often difficult. Holly, Purdy, and Brinkerton are examples of soils with slow permeability and poor drainage.

Many soils used for crop production in the survey area have a low content of organic matter. Generally, the structure of such soils is weak, and intensive rainfall commonly results in crusting of the surface when the soil dries. The crust usually is hard and nearly impervious to water, and it reduces infiltration and increases runoff. Regular additions of crop residue, manure, and other organic material help to improve soil structure and reduce crust formation.

Generally, fall plowing is not considered to be an effective practice on light-colored soils with a surface layer of silt loam. Fall plowing commonly results in the formation of a crust during the winter and spring. Many soils are nearly as dense and hard at planting time after fall plowing as they were before they were plowed. In addition, sloping soils are subject to accelerated erosion if they are plowed in the fall.

Corn is the major row crop in the county, although grain sorghum and potatoes are sometimes grown. Wheat, oats, and barley are the common close-growing crops in the county. The special commercial crops produced in the survey area are apples, vegetables, and nursery plants.

Soils that are deep, have good natural drainage, and warm up early in spring are best suited for the special crops such as the tree fruits. Good air drainage is needed to reduce frost damage to apples and peaches. Morrison, Mertz, and Leck Kill soils generally have suitable properties for tree fruits.

yields per acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green-manure crops; and harvesting that insures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils.

land capability classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. These levels are defined in the following paragraphs.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have slight limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe-4 or IIIe-6.

The acreage of soils in each capability class and subclass is shown in table 6. The capability classification of each map unit is given in the section "Detailed soil map units."

woodland management and productivity

Paxton G. Wolfe, woodland conservationist, Soil Conservation Service, assisted with the preparation of this section.

Blair County has approximately 221,900 acres of woodland (*5*), 80 percent of which is privately owned. Sawtimber makes up approximately 54 percent of the acreage in commercial forests, poletimber 27 percent, seedlings and saplings 17 percent, and nonstocked or sparsely stocked areas 2 percent. Stands of second- and third-growth trees make up most of the woodland. The principal forest cover types in the county and the extent of each, as given by the Forest Service, are as follows (*3*):

Oak-hickory cover type makes up 56 percent of the total woodland. This type mainly consists of white oak, red oak, and hickory, although black oak and chestnut oak are dominant in some areas. The principal associates are yellow-poplar, shagbark hickory, white ash, red maple, and beech.

Maple-beech-birch cover type makes up 21 percent of the woodland in the county. Sugar maple, beech, and yellow birch are the component species in this cover type. Associated species are various mixtures of basswood, red maple, hemlock, red oak, white ash, white pine, black birch, black cherry, yellow-poplar, and cucumbertree.

Elm-ash-red maple makes up 10 percent of the total woodland. This cover type is dominated by white ash, American elm, and red maple. Associated species are slippery elm, yellow birch, sycamore, and hemlock.

Aspen-birch cover type makes up 5 percent of the woodland. Quaking aspen, bigtooth aspen, and gray birch dominate the mixture of this cover type. The principal associates are pin cherry, red maple, yellow birch, white pine, ash, and sugar maple.

The chestnut oak cover type, which makes up 5 percent, has the chestnut oak in pure stands or as the dominant species. Common associates are red oak, white oak, black oak, scarlet oak, pitch pine, blackgum, and red maple.

The white pine cover type makes up 2 percent of the woodland in the county. White pine is pure or dominant. The principal associates are Virginia pine and pitch pine, ash, sugar maple and red maple, hemlock, red oak and white oak, quaking aspen and bigtooth aspen, and paper birch, yellow birch, and black birch.

The Virginia pine-pitch pine cover type is 1 percent of the total woodland in Blair County. Virginia pine and pitch pine are dominant. The principal associates are red oak, black oak, scarlet oak, chestnut oak, and hickory.

According to the system used by the Soil Conservation Service, 95 percent of the woodland in the county is on soils that have a rating of very high, high, or moderately high potential for trees; 4 percent is on soils that have moderate rating; and 1 percent is on soils that have low rating. In general, the soils in the county are capable of

supporting good stands of red oak, sugar maple, ash, and white pine.

Table 7 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination (woodland suitability) symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *x* indicates stoniness or rockiness; *w*, excessive water in or on the soil; *d*, restricted root depth; *c*, clay in the upper part of the soil; *f*, high content of coarse fragments in the soil profile; and *r*, steep slopes. The letter *o* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: x, w, d, c, f, and r.

In table 7, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or in equipment; and *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree to which the soil affects the mortality of tree seedlings. Plant competition is not considered in the ratings. The ratings apply to seedlings from good stock that are properly planted during a period of sufficient rainfall. A rating of *slight* indicates that the expected mortality is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

Ratings of *windthrow hazard* are based on soil characteristics that affect the development of tree roots and the ability of the soil to hold trees firmly. A rating of *slight* indicates that a few trees may be blown down by normal winds; *moderate*, that some trees will be blown down during periods of excessive soil wetness and strong winds; and *severe*, that many trees are blown down during periods of excessive soil wetness and moderate or strong winds.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in 50 years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor. They are the most important tree species in regard to growth rate, quality, value, and marketability. Other tree species that commonly occur on the soil are also listed, regardless of potential value or growth.

Trees to plant are those that are suited to the soils and to commercial wood production.

recreation

The undeveloped areas of woodland and adjoining farmland and the streams in the county provide the major source of recreational activities. The type of recreational activities these areas provide is variable but includes such activities as hunting, camping, horseback riding, fishing, hiking, and nature study. While most of the woodland and the land through which the streams flow is privately owned, a large acreage is publicly owned or controlled. The Pennsylvania Game Commission, for example, controls more than 29,000 acres of game land. Public parks are another source of recreational activities. Canoe State Park, with an area of approximately 900 acres and a manmade lake of about 155 acres, is the largest public park in the county.

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example,

interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking, horseback riding, and bicycling should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

wildlife habitat

Clayton Heiney, Jr., wildlife biologist, Soil Conservation Service, assisted with the preparation of this section.

The principal species of game in the county are white-tailed deer, black bear, gray squirrel, cottontail rabbit, ruffed grouse, ring-necked pheasant, and wild turkey. The more abundant fur bearers are muskrat, raccoon, and beaver. There is also a large variety of songbirds, reptiles, amphibians, and small mammals.

The distribution of wildlife species in the county is related to land use and can be identified by the soil associations on the general soil map. White-tailed deer, for instance, are throughout the Laidig-Hazleton-Buchanan, Laidig-Hazleton-Clymer, Morrison, Berks-Brinkerton-Weikert, and Leck Kill-Meckesville-Albrights associations. These wooded or partially wooded areas provide cover and food. Ruffed grouse inhabit these same soil associations in timbered areas or along edges of fields where these associations join the Hublersburg-Murrill-Opequon and Edom-Opequon-Morrison associations.

Ring-necked pheasants and cottontail rabbits are plentiful in areas that are or were farmed; these areas are in the Hublersburg-Murrill-Opequon, Edom-Opequon-Morrison, and Berks-Brinkerton-Weikert associations.

Gray squirrel and turkey prefer the mature wooded areas of the Laidig-Hazleton-Buchanan, Laidig-Hazleton-Clymer, and Morrison associations. The oak and hickory trees provide a plentiful supply of food for these species.

Black bear prefer the more isolated woodlands and abundant water supply of the northwestern part of the county, in the Laidig-Hazleton-Clymer association. Raccoon inhabit all areas of the county, and muskrat and beaver live along the streams and ponds. Beaver are scarce, but some inhabit the game lands along Bald Eagle Creek in the northern part of the county.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, wheatgrass, and grama.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, the available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

Coniferous plants furnish browse, seeds, and cones. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas.

engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations need to be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial,

and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

building site development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

sanitary facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to effectively filter the effluent. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

construction materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a probable or improbable source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil

layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as *good* or *fair* has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as *poor* or *unsuited*. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

water management

Table 13 gives information on the soil properties and site features that affect water management. The kind of soil limitation is given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed ponds. This table also gives for each soil the restrictive features that affect drainage, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include

less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to reduce erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

soil properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

engineering index properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil series and their morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture (*4*). These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains particles coarser than sand, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (*2*) and the system adopted by the American Association of State Highway and Transportation Officials (*1*).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as Pt. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are rounded to the nearest 5 percent.

Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

physical and chemical properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, and plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3 bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

In table 15, the estimated content of organic matter of the plow layer is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity,

infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

soil and water features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt and water in swamps and marshes are not considered flooding.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period November through May.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table—that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 16.

An apparent water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. An artesian water table is under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A perched water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Only saturated zones within a depth of about 6 feet are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is

not artificially drained. Silty and highly structured clayey soils that have a high water table in winter are most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

classification of the soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (*6*). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. In table 17, the soils of the survey area are classified according to the system. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haplaquents (*Fluv*, meaning water deposited, plus *aquent*, the suborder of the Entisols that have an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Fluvaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, nonacid, mesic Typic Fluvaquents.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

soil series and their morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (*4*). Many of the technical terms used in the descriptions are defined in Soil Taxonomy (*6*). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed soil map units."

Albrights series

Soils of the Albrights series are fine-loamy, mixed, mesic Aquic Fragiudalfs. The soils are deep and moderately well drained and somewhat poorly drained. They are on the lower foot slopes and benches of upland mountains and ridges. They formed in colluvial material derived from red shale and sandstone. Slopes range from 3 to 25 percent.

Albrights soils are associated on the landscape with Meckesville, Buchanan, Laidig, Leck Kill, and Brinkerton soils. Meckesville, Laidig, and Leck Kill soils are well drained, and Brinkerton soils are poorly drained. Albrights soils are redder in the upper part of the solum than the Buchanan soils.

Typical pedon of Albrights gravelly silt loam, in an area of Albrights very stony silt loam, 8 to 25 percent slopes, in a wooded area 1-1/2 miles east of Route 07051, on Route 07008 to Pennsylvania Game Land 73; 1/4 mile east on game land road, in a roadbank on the east side of the road:

A1—0 to 2 inches, black (5YR 2/1) gravelly loam; weak fine granular structure; friable, nonsticky, nonplastic; 15 percent coarse fragments; very strongly acid; abrupt wavy boundary.
A2—2 to 5 inches, reddish brown (5YR 5/3) gravelly silt loam; weak fine granular structure; friable, nonsticky, nonplastic; 15 percent coarse fragments; very strongly acid; clear wavy boundary.
B1—5 to 10 inches, reddish brown (5YR 5/4) gravelly silt loam; few fine faint strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable, nonsticky, slightly plastic; few thin clay films in pores; 20 percent coarse fragments; very strongly acid; clear wavy boundary.
B21t—10 to 16 inches, yellowish red (5YR 5/6) gravelly silty clay loam; common fine distinct strong brown (7.5YR 5/6) mottles; weak medium and coarse subangular blocky structure; friable, slightly sticky, slightly plastic; continuous moderately thick clay films on ped faces and in pores; 20 percent coarse fragments; very strongly acid; clear wavy boundary.
B22t—16 to 22 inches, reddish brown (5YR 5/3) gravelly silty clay loam; common fine faint light gray (5YR 7/1) mottles and many medium distinct strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable, slightly sticky, plastic; continuous moderately thick clay films on ped faces and in pores; 25 percent coarse fragments; very strongly acid; abrupt wavy boundary.
Bx1—22 to 34 inches, reddish brown (5YR 4/4) gravelly light silty clay loam; many coarse faint light gray (5YR 7/1) mottles; strong very coarse prismatic structure; very firm, brittle, slightly sticky, slightly plastic; continuous thick clay films on ped faces and in pores; 35 percent coarse fragments; strongly acid; gradual wavy boundary.
Bx2—34 to 60 inches, reddish brown (2.5YR 4/4) gravelly light silty clay loam; strong very coarse prismatic structure: very firm, brittle, slightly sticky, slightly plastic; few black coatings; 40 percent coarse fragments; strongly acid.

The solum thickness is 40 to 60 inches or more. The depth to bedrock is more than 5 feet, and the depth to the fragipan ranges from 22 to 32 inches. Low chroma mottles are at a depth of 12 to 18 inches. The content of coarse fragments ranges from 5 to 25 percent in the part of the solum above the Bx horizon and from 20 to 45 percent in the Bx horizon. In unlimed areas reaction is very strongly acid and strongly acid in the upper part of the solum and strongly acid and medium acid in the lower part.

The A1 horizon has hue of 5YR and 7.5YR, value of 2 and 3, and chroma of 1 through 3. The A2 horizon has hue of 5YR and 7.5YR, value of 4 and 5, and chroma of 3 and 4. The fine-earth texture is dominantly silt loam but is loam in some areas.

The B1 and B2 horizons have hue of 5YR and 2.5YR, value of 4 and 5, and chroma of 3 through 6. Mottles have hue of 5YR through 10YR, value of 5 through 8, and chroma of 1 through 8. The fine-earth textures are silt loam, clay loam, and silty clay loam.

The Bx horizon has hue of 5YR and 2.5YR, value of 4 and 5, and chroma of 4 through 6 and is mottled in the upper part. The fine-earth textures range from loam to light silty clay loam.

Andover Variant

Soils of the Andover Variant are fine-loamy, mixed, mesic Typic Fragiaqualfs. The soils are deep and poorly drained and are on lower mountain foot slopes. They formed in colluvium derived from sandstone and some shale. Slopes range from 3 to 8 percent.

Andover Variant soils are associated on the landscape with Laidig, Buchanan, and Hazleton soils. Buchanan soils are moderately well drained and somewhat poorly drained, and Hazleton and Laidig soils are well drained.

Typical pedon of Andover Variant loam, in an area of Andover Variant extremely stony loam, 3 to 8 percent slopes, in a wooded area, 1-1/2 miles north of the intersection of Canoe Creek and U.S. Route 22 on Route 07021, 3 miles on road to Pennsylvania Game Land 166, 100 feet north of road:

A1—0 to 3 inches, very dark gray (10YR 3/1) loam; weak very fine and fine granular structure; friable, nonsticky, nonplastic; very strongly acid; abrupt wavy boundary.
A2—3 to 8 inches, grayish brown (10YR 5/2) loam; common medium prominent reddish yellow (5YR 6/8) mottles; weak medium granular structure; friable, slightly sticky, nonplastic; few coarse fragments; strongly acid; clear wavy boundary.
B2tg—8 to 18 inches, light brownish gray (10YR 6/2) gravelly clay loam; common medium distinct pinkish gray (7.5YR 6/2) mottles; moderate medium and coarse subangular blocky structure; friable, slightly sticky, slightly plastic; many moderately thick clay films on ped faces and in pores; 15 percent coarse fragments; strongly acid; clear wavy boundary.
Bx1g—18 to 28 inches, gray (10YR 6/1) gravelly clay loam; many coarse distinct strong brown (7.5YR 5/6 mottles; weak very coarse prismatic structure; very firm, brittle, nonsticky, slightly plastic; many moderately thick clay films on peds and in pores; 15 percent coarse fragments; strongly acid; clear wavy boundary.
Bx2g—28 to 36 inches, light brownish gray (2.5Y 6/2) gravelly clay loam; many coarse faint yellowish red

(5YR 5/8) mottles; weak very coarse prismatic structure parting to weak medium platy; very firm, brittle, nonsticky and slightly plastic; many moderately thick clay films on prism faces and in pores; 20 percent coarse fragments; medium acid; clear wavy boundary.

Bx3g—36 to 50 inches, light brownish gray (2.5Y 6/2) gravelly sandy clay loam; common fine faint white (5YR 8/1) and yellowish red (5YR 5/8) mottles; weak very coarse prismatic structure parting to weak thin platy; very firm, brittle; nonsticky, slightly plastic; common thin clay films on prism faces and in pores; 20 percent coarse fragments; neutral; clear wavy boundary.

C—50 to 60 inches, gray (5YR 6/1) gravelly sandy loam; common medium distinct yellowish brown (10YR 5/8) and reddish yellow (7.5YR 7/6) mottles; massive; firm, nonsticky, slightly plastic; 20 percent coarse fragments; neutral.

The solum thickness ranges from 40 to 50 inches. The depth to bedrock is 5 feet or more, and the depth to the fragipan ranges from 18 to 26 inches. Reaction is very strongly acid and strongly acid in the upper part of the solum and medium acid to neutral in the lower part. The content of coarse fragments ranges from 10 to 40 percent in the B horizon and from 20 to 50 percent in the C horizon.

The A horizon has hue of 10YR and 2.5Y, value of 2 through 6, and chroma of 1 and 2. The fine-earth texture is dominantly loam but is silt loam and sandy loam in some areas.

The Bt horizon has hue of 10YR and 2.5Y, value of 4 through 6, and chroma of 1 and 2. Mottles have hue of 5YR though 10YR, value of 5 and 6, and chroma of 1 through 6. The fine-earth textures are loam, clay loam, or sandy clay loam.

The Bx horizon has hue of 10YR and 2.5Y, value of 4 through 6, and chroma of 1 and 2. Mottles have hue of 5YR and 7.5YR, value of 5 through 8, and chroma of 1 through 8. The fine-earth textures are clay loam, loam, and sandy clay loam.

The C horizon has hue of 5YR through 10YR, value of 5 and 6, and chroma of 1 through 3. The fine-earth textures are sandy loam, loam, and sandy clay loam.

Basher series

Soils of the Basher series are coarse-loamy, mixed, mesic Fluvaquentic Dystrochrepts. The soils are deep and moderately well drained and somewhat poorly drained and are on flood plains mostly along the Little Juniata and Frankstown Branch of the Juniata River. The soils formed in alluvium washed from sandstone and shale uplands. Slopes range from 0 to 3 percent.

Basher soils are associated on the landscape with Linden, Holly, and Monongahela soils. Linden soils are well drained, Holly soils are poorly drained, and Monongahela soils are moderately well drained and have a fragipan.

Typical pedon of Basher loam, in an area of Basher soils, 3/4 mile east of Route 36 on Route 07012, 200 feet south of a road in an abandoned field along the Frankstown Branch of the Juniata River:

Ap—0 to 7 inches, dark brown (7.5YR 4/2) loam; weak fine granular structure; friable, nonsticky, nonplastic; very strongly acid; abrupt smooth boundary.

B21—7 to 12 inches, strong brown (7.5YR 5/6) silt loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; very strongly acid; clear smooth boundary.

B22—12 to 24 inches, yellowish red (5YR 4/6) silt loam; many faint pinkish gray (5YR 6/2) mottles; weak medium subangular blocky structure; firm, slightly sticky, slightly plastic; very strongly acid; clear wavy boundary.

B3—24 to 30 inches, strong brown (7.5YR 5/6) loam, many medium faint pinkish gray (7.5YR 6/2) mottles; weak fine subangular blocky structure; firm, nonsticky, nonplastic; strongly acid; abrupt smooth boundary.

C1—30 to 35 inches, reddish brown (5YR 4/4) fine sandy loam; common medium distinct strong brown (7.5YR 5/6) mottles and many coarse distinct pinkish gray (7.5YR 6/2) mottles; massive; firm, nonsticky, nonplastic; strongly acid; clear wavy boundary.

C2—35 to 41 inches, reddish brown (5YR 4/4) gravelly fine sandy loam; common coarse distinct pinkish gray (7.5YR 7/2) mottles and common coarse medium faint yellowish red (5YR 5/6) mottles; massive; friable, nonsticky, nonplastic; 40 percent coarse fragments; strongly acid; clear wavy boundary.

C3—41 to 60 inches, reddish brown (5YR 4/3) very gravelly sandy loam; massive; friable, nonsticky, nonplastic; 60 percent coarse fragments; medium acid.

Solum thickness ranges from 20 to 40 inches. The depth to strongly contrasting material or bedrock is more than 40 inches. The depth to mottles with chroma of 2 or less ranges from 10 to 24 inches. Reaction ranges from very strongly acid to medium acid in the solum and from very strongly acid to slightly acid in the substratum. The content of coarse fragments ranges from 0 to 20 percent above a depth of 30 inches and from 0 to 60 percent below a depth of 30 inches.

The Ap horizon has hue of 5YR through 10YR, value of 3 or 4, and chroma of 2 through 4. The fine-earth textures are loam, silt loam, and fine sandy loam.

The B horizon has hue of 2.5YR through 7.5YR, value of 3 through 5, and chroma of 3 through 6. Mottles have hue of 2.5YR through 7.5YR, value of 3 through 6, and chroma of 2 or less. The fine-earth textures are loam, silt loam, and fine sandy loam.

The C horizon has hue of 5YR and 7.5YR, value of 3 through 5, and chroma of 3 and 4. The fine-earth textures are loam and fine sandy loam to a depth of 40 inches and sandy loam, sand, or loamy sand below a depth of 40 inches.

Bedington series

Soils of the Bedington series are fine-loamy, mixed, mesic Typic Hapludults. The soils are deep and well drained and are on convex slopes of upland shale ridges. The soils formed in residuum derived from weathered shale, siltstone, and some sandstone. Slopes range from 3 to 25 percent.

Bedington soils are associated on the landscape with Leck Kill, Berks, Brinkerton, and Ernest soils. Bedington soils are less red than Leck Kill soils, deeper than Berks soils, and better drained than Brinkerton or Ernest soils.

Typical pedon of Bedington channery silt loam, in an area of Bedington very stony silt loam, 8 to 25 percent slopes, 1/4 mile southeast of PA Route 860 on Avalon Road to Route T480, 3/4 mile northeast of Avalon Road on T480, 500 feet south of T480, in woods:

O2—1 inch to 0, partially decomposed leaf material.
A1—0 to 1 inch, black (10YR 2/1) channery silt loam; weak very fine granular structure; very friable, nonsticky, nonplastic; 15 percent coarse fragments; very strongly acid; abrupt wavy boundary.
A2—1 to 7 inches, dark grayish brown (10YR 4/2) channery silt loam; moderate very fine granular structure; very friable, nonsticky, nonplastic; 15 percent coarse fragments; very strongly acid; clear wavy boundary.
B1—7 to 11 inches, yellowish brown (10YR 5/6) shaly silt loam; moderate very fine subangular blocky structure; very friable, slightly sticky, nonplastic; 25 percent coarse fragments; very strongly acid; clear wavy boundary.
B21t—11 to 21 inches, yellowish brown (10YR 5/6) channery light silty clay loam; moderate medium subangular blocky structure; friable, slightly sticky, nonplastic; many moderately thick clay films on ped faces and in pores; 25 percent coarse fragments; strongly acid; gradual wavy boundary.
B22t—21 to 37 inches, strong brown (7.5YR 5/6) channery light silty clay loam; moderate medium and coarse subangular blocky structure; friable, slightly sticky, slightly plastic; many moderately thick clay films on ped faces and in pores; 35 percent coarse fragments; strongly acid; clear wavy boundary.
B23t—37 to 51 inches, yellowish red (5YR 5/6) very channery light silty clay loam; weak fine subangular blocky structure; firm, slightly sticky, nonplastic; common moderately thick clay films on ped faces; 75 percent coarse fragments; strongly acid; gradual wavy boundary.
C—51 to 63 inches, yellowish brown (10YR 5/6) very channery silt loam; massive; firm, nonsticky, nonplastic; 90 percent coarse fragments: strongly acid; clear wavy boundary.
R—63 inches, olive (5Y 4/4) shale bedrock.

The solum thickness ranges from 40 to 60 inches. The depth to bedrock is 3-1/2 feet or more. The content of coarse fragments ranges from 5 to 40 percent in the upper part of the solum, from 25 to 80 percent in the lower part of the solum, and from 60 to 90 percent in the C horizon. Reaction ranges from very strongly acid to neutral in the upper part of the solum, and is very strongly acid and strongly acid in the lower part of the solum and in the C horizon.

The A1 horizon has hue of 10YR, value of 2 or 3, and chroma of 1 and 2. The A2 horizon has hue of 10YR, value of 3 and 4, and chroma of 2 through 4. The fine-earth texture is dominantly silt loam but is loam in some areas.

The B horizon has hue of 5YR through 10YR, value of 4 through 6, and chroma of 4 through 8. The fine-earth textures are silt loam and light silty clay loam.

The C horizon has hue of 5YR through 10YR, value of 4 through 6, and chroma of 4 through 8. The fine-earth textures are silt loam, loam, and silty clay loam.

Berks series

Soils of the Berks series are loamy-skeletal, mixed, mesic Typic Dystrochrepts. The soils are moderately deep and well drained and are on the side slopes and tops of highly dissected ridges. They formed in residuum weathered from shale, siltstone, and some sandstone. Slopes range from 3 to 70 percent.

Berks soils are associated on the landscape with Weikert, Bedington, Blairton, Brinkerton, and Ernest soils. Weikert soils are shallow, and Bedington soils are deep. Blairton soils are somewhat poorly drained and moderately well drained, Brinkerton soils are poorly drained, and Ernest soils are moderately well drained.

Typical pedon of Berks channery silt loam, 15 to 25 percent slopes, in a wooded area, 1/4 mile north of Logan Boulevard on 33rd Street, east side of a road in Altoona:

A1—0 to 2 inches, very dark gray (10YR 3/1) channery silt loam; weak fine granular structure; friable, nonsticky, nonplastic; 15 percent coarse fragments; strongly acid; abrupt smooth boundary.
B1—2to 7 inches, dark brown (7.5YR 4/4) channery silt loam; weak fine granular structure; friable, nonsticky, nonplastic; 25 percent coarse fragments; strongly acid; clear wavy boundary.
B21—7 to 12 inches, dark brown (7.5YR 4/4) shaly silt loam; weak fine subangular blocky structure; friable, nonsticky, nonplastic; 30 percent coarse fragments; very strongly acid; clear wavy boundary.
B22—12 to 20 inches, dark brown (7.5YR 4/4) very channery silt loam; weak medium subangular blocky

structure; friable, slightly sticky, nonplastic; 60 percent coarse fragments; very strongly acid; clear wavy boundary.
B3—20 to 25 inches, brown (7.5YR 5/4) very channery silt loam; weak fine granular structure; friable, nonsticky, nonplastic; 70 percent coarse fragments; very strongly acid; clear wavy boundary.
C—25 to 29 inches, yellowish brown (10YR 5/4) very shaly silt loam; massive; firm, nonsticky, nonplastic; 80 percent coarse fragments; very strongly acid; abrupt wavy boundary.
R—29 inches, dark olive gray (5Y 3/2) acid shale.

The solum ranges from 20 to 30 inches in thickness. The depth to bedrock is 20 to 40 inches. The content of coarse fragments ranges from 10 to 30 percent in the A horizon, from 25 to 75 percent in the B horizon, and from 65 to 80 percent in the C horizon. The average content of coarse fragments in the particle-size control section is more than 35 percent. Reaction in unlimed areas is very strongly acid and strongly acid throughout.

The A1 horizon has hue of 10YR, value of 2 and 3, and chroma of 1 through 3. The fine-earth texture is dominantly silt loam but is loam in some areas.

The B horizon has hue of 10YR and 7.5YR and chroma and value of 4 through 6. The fine-earth textures are silt loam and loam.

The C horizon has hue of 10YR through 5YR, value of 4 through 6, and chroma of 3 through 6. The fine-earth textures are silt loam and loam.

Blairton series

Soils of the Blairton series are fine-loamy, mixed, mesic Aquic Hapludults. The soils are moderately deep and somewhat poorly drained and moderately well drained. They are on side slopes of upland ridges. The soils formed in residuum weathered from shale and some sandstone. Slopes range from 3 to 15 percent.

Blairton soils are associated on the landscape with Berks, Bedington, Weikert, Brinkerton, and Ernest soils. Berks, Bedington, and Weikert soils are well drained, and Brinkerton and Ernest soils have a fragipan.

Typical pedon of Blairton silt loam, 8 to 15 percent slopes, in a wooded area 1,000 feet northeast of the intersection of Routes T471 and 07026, 600 feet southeast of Altoona Campus grounds, in a road cut on the north side of the road:

O2—1 inch to 0, decomposed leaf litter.
A1—0 to 4 inches, dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable, nonsticky, nonplastic; 2 percent coarse fragments; very strongly acid; clear wavy boundary.
B1—4 to 12 inches, brown (10YR 5/3) silt loam; moderate fine subangular blocky structure; friable, nonsticky, slightly plastic; 10 percent coarse fragments; very strongly acid; clear wavy boundary.
B21t—12 to 19 inches, yellowish brown (10YR 5/4) silt loam; moderate medium subangular blocky structure; friable, slightly sticky, plastic; few thin continuous clay films on ped faces; 10 percent coarse fragments; very strongly acid; clear wavy boundary.
B22t—19 to 34 inches, strong brown (7.5YR 5/6) shaly silt loam; common medium prominent light gray (10YR 7/2) mottles; moderate medium subangular blocky structure; friable, slightly sticky, plastic; common thin continuous clay films on ped faces; 35 percent coarse fragments; very strongly acid; clear smooth boundary.
R—34 inches, brown (10YR 4/3) acid shale bedrock.

The solum thickness and depth to bedrock range from 20 to 40 inches. The content of coarse fragments ranges from 0 to 10 percent in the A horizon and from 10 to 50 percent in the Bt horizon. Reaction in unlimed areas is extremely acid to strongly acid throughout.

The A horizon has hue of 2.5Y and 10YR, value of 3 and 4, and chroma of 2 through 4. The fine-earth texture is dominantly silt loam but is loam in some areas.

The B horizon has hue of 2.5Y through 7.5YR, value of 5 and 6, and chroma of 2 through 6. The fine-earth textures are silt loam, loam, and silty clay loam. Mottles with chroma of 2 or less are in either or both the B21t and B22t horizons between depths of 13 and 25 inches.

Brinkerton series

Soils of the Brinkerton series are fine-silty, mixed, mesic Typic Fragiaqualfs. The soils are deep and poorly drained and are on the foot slopes and benches of upland shale ridges. The soils formed in colluvium weathered from brown shale and sandstone. Slopes range from 3 to 15 percent.

Brinkerton soils are associated on the landscape with Berks, Weikert, Bedington, Gilpin, and Ernest soils. Berks, Weikert, Bedington, and Gilpin soils are well drained, and Ernest soils are moderately well drained.

Typical pedon of Brinkerton silt loam, 3 to 8 percent slopes, 2 miles north of Route 07028 on PA Route 865 and 2,000 feet east of a road in a hayfield:

Ap—0 to 10 inches, dark grayish brown (10YR 4/2) heavy silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; neutral; abrupt smooth boundary.
B21tg—10 to 16 inches, light brownish gray (10YR 6/2) silty clay loam; common fine distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable, slightly sticky, plastic; common thin clay films on ped faces and in pores; 10 percent coarse fragments; strongly acid; gradual wavy boundary.
B22tg—16 to 21 inches, gray (10YR 6/1) silty clay loam; many medium distinct yellowish brown (10YR 5/6)

mottles; moderate coarse angular blocky structure; friable, sticky, plastic; continuous moderately thick clay films on ped faces and in pores; 5 percent coarse fragments; strongly acid; clear wavy boundary.

Bx1g—21 to 29 inches, light brownish gray (2.5Y 6/2) shaly light silty clay loam; many coarse distinct yellowish brown (10YR 5/6) mottles; few medium black coatings; weak very coarse prismatic structure parting to weak thin platy; very firm, brittle when dry, slightly sticky, plastic; continuous moderately thick clay films on plates; 20 percent coarse fragments; medium acid; clear wavy boundary.

Bx2g—29 to 40 inches, light brownish gray (2.5Y 6/2) shaly light silty clay loam; many coarse faint olive brown (2.5Y 4/4) mottles and common medium distinct yellowish brown (10YR 5/6) mottles; weak very coarse prismatic structure; very firm, brittle when dry, slightly sticky, slightly plastic; many thin clay films in pores; 20 percent coarse fragments; medium acid; gradual wavy boundary.

C—40 to 60 inches, olive brown (2.5Y 4/4) very shaly light silty clay loam; common fine distinct yellowish brown (10YR 5/6) mottles and black coatings; massive; firm, slightly sticky, slightly plastic; 70 percent coarse fragments; slightly acid.

The solum thickness ranges from 40 to 50 inches. The depth to bedrock is 5 feet or more, and the depth to the fragipan ranges from 19 to 30 inches. The content of coarse fragments ranges from 0 to 10 percent in the A and Bt horizons, from 10 to 20 percent in the Bx horizon, and from 20 to 80 percent in the C horizon. Unless limed, the soil ranges from very strongly acid to medium acid in the solum and from strongly acid to slightly acid in the C horizon.

The A horizon has hue of 10YR and 2.5Y, value of 4 and 5, and chroma of 1 through 3. The fine-earth texture is dominantly silt loam but is silty clay loam in some areas.

The Bt horizon has hue of 10YR and 2.5Y, value of 5 and 6, and chroma of 1 and 2. Mottles have hue of 7.5YR through 2.5Y, value of 4 through 7, and chroma of 1 through 8. The fine-earth textures are heavy silt loam and silty clay loam.

The Bx horizon has hue of 10YR and 2.5Y, value of 5 and 6, and chroma of 1 and 2. Mottles have hue of 7.5YR through 5Y, value of 4 and 5, and chroma of 1 through 8. The fine-earth textures are silt loam, loam, and silty clay loam.

The C horizon has hue of 10YR and 2.5Y, value of 4 and 5, and chroma of 2 through 4. Mottles have hue of 10YR through 5Y or are neutral, value of 5 through 7, and chroma of 0 through 6. The fine-earth textures are silt loam, loam, and silty clay loam.

Buchanan series

Soils of the Buchanan series are fine-loamy, mixed, mesic Aquic Fragiudults. The soils are deep and somewhat poorly drained and moderately well drained and are on concave foot slopes. The soils formed in colluvium weathered from sandstone, siltstone, and shale. Slopes range from 3 to 25 percent.

Buchanan soils are associated on the landscape with Hazleton, Laidig, Berks, and Andover Variant soils. Hazleton, Berks, and Laidig soils are well drained, and Andover Variant soils are poorly drained.

Typical pedon of Buchanan gravelly silt loam, in an area of Buchanan extremely stony silt loam, 8 to 25 percent slopes, in a wooded area in Pennsylvania State Game Land 147, on Route T378, 3-1/2 miles southeast of the intersection of Routes 07011 and T376:

O2—1 inch to 0, undecomposed leaf material.

A1—0 to 1 inch, very dark gray (10YR 3/1) silt loam; weak fine granular structure; friable, nonsticky, nonplastic; 5 percent coarse fragments; strongly acid; abrupt wavy boundary.

A2—1 to 4 inches, dark brown (10YR 4/3) gravelly silt loam; weak fine granular structure; friable, nonsticky, slightly plastic; 20 percent coarse fragments; strongly acid; abrupt wavy boundary.

B21t—4 to 12 inches, brownish yellow (10YR 6/6) gravelly clay loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; few thin patchy clay films on ped faces; 20 percent coarse fragments; strongly acid; clear wavy boundary.

B22t—12 to 21 inches, light yellowish brown (10YR 6/4) channery clay loam; few fine faint light gray (10YR 7/2) mottles and many fine distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable, slightly sticky, plastic; continuous moderately thick clay films on ped faces and in pores; 25 percent coarse fragments; strongly acid; clear wavy boundary.

Bx1—21 to 34 inches, light yellowish brown (10YR 6/4) channery clay loam; common medium faint light gray (10YR 7/2) mottles and common medium distinct strong brown (7.5YR 5/6) mottles; weak very coarse prismatic structure; very firm, brittle, sticky, plastic; common thin clay films on ped faces; 40 percent coarse fragments; strongly acid; gradual wavy boundary.

Bx2—34 to 46 inches, yellowish brown (10YR 5/4) very channery clay loam; common medium distinct pinkish gray (7.5YR 7/2) mottles; weak very coarse prismatic structure; very firm, brittle, sticky, plastic; few thin clay films on ped faces; 60 percent coarse fragments; strongly acid; gradual wavy boundary.

C—46 to 60 inches, strong brown (7.5YR 5/6) very channery clay loam; many coarse distinct yellowish red (5YR 5/6) and light gray (10YR 7/1) mottles;

massive; firm, slightly sticky, slightly plastic; 60 percent coarse fragments; strongly acid.

The solum thickness ranges from 42 to 60 inches. The depth to bedrock is more than 5 feet, and the depth to the fragipan ranges from 20 to 36 inches. Mottles with chroma of 2 or less are at a depth of 12 to 24 inches. The content of coarse fragments ranges from 5 to 20 percent in the A horizon, 10 to 25 percent in the B2t horizon, and 25 to 60 percent in the Bx and C horizons. Unless limed, the soil is very strongly acid and strongly acid throughout.

The A horizon has hue of 10YR, value of 3 and 4, and chroma of 1 through 4. The fine-earth texture is dominantly silt loam but is loam in some areas.

The B1 and B2t horizons have hue of 10YR, value of 5 and 6, and chroma of 4 through 6. Mottles have hue of 10YR and 7.5YR, value of 5 through 7, and chroma of 2 through 8. The fine-earth textures are silt loam, sandy clay loam, and clay loam.

The Bx horizon has hue of 5YR through 10YR, value of 4 through 6, and chroma of 3 through 6. Mottles have hue of 10YR and 5YR, value of 4 through 6, and chroma of 1 through 8. The fine-earth textures are loam, clay loam, or sandy clay loam.

The C horizon has hue of 10YR and 7.5YR, value of 5 and 6, and chroma of 6 through 8. The fine-earth textures are clay loam and sandy clay loam.

Cavode series

Soils of the Cavode series are clayey, mixed, mesic Aeric Ochraquults. The soils are deep and somewhat poorly drained and are on the tops and side slopes of ridges and hills. They formed in residuum weathered from shale and some siltstone. Slopes range from 3 to 8 percent.

The Cavode soils are associated on the landscape with Gilpin, Wharton, Weikert, Brinkerton, and Ernest soils. The Gilpin and Weikert soils are well drained, the Wharton soils are moderately well drained, and the Brinkerton soils are poorly drained.

Typical pedon of Cavode silt loam, 3 to 8 percent slopes, in a hayfield, 1/4 mile east of the intersection of Routes 07049 and PA 164, 400 feet south of road:

Ap—0 to 7 inches, dark brown (10YR 3/3) silt loam; weak medium granular structure; friable, slightly sticky, nonplastic; 5 percent coarse fragments; medium acid; abrupt smooth boundary.

B21t—7 to 12 inches, yellowish brown (10YR 5/6) light silty clay loam; common medium distinct light brownish gray (10YR 6/2) mottles; moderate fine subangular blocky structure; friable, slightly sticky, slightly plastic; many thin clay films on ped faces and in pores; 10 percent coarse fragments; strongly acid; clear wavy boundary.

B22tg—12 to 26 inches, yellowish brown (10YR 5/4) channery silty clay loam; light brownish gray (2.5Y 6/2) ped faces; many medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable, sticky, slightly plastic; many moderately thick clay films on ped faces and in pores; 15 percent coarse fragments; strongly acid; gradual wavy boundary.

B23tg—26 to 39 inches, light brownish gray (2.5Y 6/2) channery silty clay loam; many coarse prominent strong brown (7.5YR 5/6) mottles; weak coarse subangular blocky structure; firm, sticky, plastic; common moderately thick clay films on ped faces and in pores; common black coatings; 15 percent coarse fragments; very strongly acid; clear wavy boundary.

B3g—39 to 48 inches, light brownish gray (2.5Y 6/2) shaly silty clay loam; few fine distinct strong brown (7.5YR 5/6) and dark yellowish brown (10YR 4/4) mottles; common black coatings; weak coarse subangular blocky structure; firm, slightly sticky, slightly plastic; very few thin clay films on ped faces; 25 percent coarse fragments; very strongly acid; gradual wavy boundary.

C1—48 to 58 inches, dark yellowish brown (10YR 4/4) shaly silty clay loam; few fine distinct strong brown (7.5YR 5/6) and light gray (5Y 6/1) mottles; common black coatings; massive; firm, slightly sticky, slightly plastic; 25 percent coarse fragments; strongly acid; clear wavy boundary.

C2—58 to 62 inches, yellowish brown (10YR 5/4) shaly light silty clay loam; common coarse prominent light gray (5Y 7/1) mottles; few black coatings; massive; firm, slightly sticky, slightly plastic; 30 percent coarse fragments; strongly acid.

The solum thickness ranges from 48 to 60 inches. Bedrock is at a depth of 3-1/2 to 5 feet. The depth to mottles ranges from 5 to 10 inches. The content of coarse fragments ranges from 0 to 15 percent in the upper part of the solum and from 15 to 30 percent in the lower part of the solum and in the C horizon. Unless limed, the soil is very strongly acid and strongly acid throughout.

The Ap horizon has hue of 10YR, value of 3 and 4, and chroma of 2 and 3. The fine-earth texture is dominantly silt loam but is silty clay loam in some areas.

The upper part of the B2 horizon has hue of 10YR and 2.5Y, value of 4 and 5, and chroma of 4 through 6. Mottles have hue of 7.5YR through 2.5Y, value of 5 and 6, and chroma of 2 through 8. The lower part of the B horizon has hue of 10YR through 5Y, value of 5 and 6, and chroma of 1 and 2. Mottles have hue of 7.5YR through 2.5Y or are neutral and have value of 4 and 5 and chroma of 2 through 8. The fine-earth textures are silty clay loam, clay, or silty clay. The particle-size control section is more than 35 percent clay.

The C horizon has hue of 10YR and 2.5Y, value of 4 through 6, and chroma of 1 through 4.

Clarksburg series

Soils of the Clarksburg series are fine-loamy, mixed, mesic Typic Fragiudalfs. The soils are deep and moderately well drained and are at the base of steeper slopes and in drainageways of limestone valleys. The soils formed in colluvium weathered from limestone. Slopes range from 3 to 15 percent.

Clarksburg soils are associated on the landscape with Hublersburg, Edom, Opequon, and Wharton Variant soils. The Hublersburg, Edom, and Opequon soils are well drained, and the Wharton Variant soils are somewhat poorly drained.

Typical pedon of Clarksburg silt loam, 3 to 8 percent slopes, 1,000 feet east of the intersection of Route T273 and U.S. Route 220, in a pasture 600 feet north of Route T273:

Ap—0 to 7 inches, brown (10YR 5/3) silt loam; weak fine granular structure; friable, nonsticky, slightly plastic; medium acid; abrupt smooth boundary.

B21t—7 to 13 inches, yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; common thick clay films on peds and in pores; medium acid; clear wavy boundary.

B22t—13 to 20 inches, yellowish brown (10YR 5/6) silty clay loam; fine and medium subangular blocky structure; friable, sticky, plastic; common moderately thick clay films on peds and in pores; 5 percent coarse fragments; strongly acid; clear wavy boundary.

Bx—20 to 50 inches, yellowish red (5YR 5/6) shaly silty clay loam; many coarse prominent gray (10YR 6/1) mottles; weak very coarse prismatic structure parting to weak coarse and medium subangular blocky; very firm, brittle, sticky, plastic; few moderately thick clay films on secondary ped faces and in pores; 15 percent coarse fragments; medium acid; gradual wavy boundary.

C—50 to 60 inches, strong brown (7.5YR 5/6) silty clay loam; massive; firm, sticky, plastic; common medium black coatings; 10 percent coarse fragments; slightly acid.

The solum thickness ranges from 40 to 70 inches. The depth to bedrock is more than 5 feet, and the depth to the fragipan is 20 to 36 inches. The coarse fragment content ranges from 0 to 20 percent above the Bx horizon, from 5 to 30 percent in the Bx horizon, and from 5 to 60 percent in the C horizon. The depth to mottles with chroma of 2 or less ranges from 20 to 32 inches. Reaction ranges from strongly acid to slightly acid throughout the soil.

The Ap horizon has hue of 10YR, value of 4 and 5, and chroma of 2 and 3. The fine-earth texture is mainly silt loam but is silty clay loam in some areas.

The Bt horizon has hue of 10YR and 7.5YR, value of 4 and 5, and chroma of 4 through 8. It is dominantly silty clay loam but is silt loam in some areas. Some pedons have mottles with hue of 7.5YR through 5Y, value of 5 through 7, and chroma of 1 through 6.

The Bx horizon has hue of 10YR through 5YR, value of 4 and 5, and chroma of 4 through 6. Mottles have hue of 7.5YR through 2.5Y, value of 4 through 6, and chroma of 1 through 4. The fine-earth textures are silt loam, loam, or silty clay loam.

The C horizon has hue of 10YR and 7.5YR, value of 5, and chroma of 5 through 8. In some pedons mottles have hue of 5YR through 10YR, value of 4 through 6, and chroma of 1 through 4. The texture of the horizon ranges from silt loam to clay.

Clymer series

Soils of the Clymer series are fine-loamy, mixed, mesic Typic Hapludults. The soils are deep and well drained and are on the benches and side slopes of the Allegheny Plateau. The soils formed in residuum weathered from brown sandstone. Slopes are 3 to 25 percent.

Clymer soils are associated on the landscape with Hazleton, Gilpin, and Laidig soils. Clymer soils have fewer coarse fragments in the solum than the Hazleton soils and are deeper than the Gilpin soils. Clymer soils do not have the fragipan typical of the Laidig soils.

Typical pedon of Clymer loam, in an area of Clymer very stony loam, 3 to 8 percent slopes, in a wooded area 1-1/2 miles north of Tunnel Hill on Route 07068, 500 feet east of road:

O2—1 inch to 0, partially decomposed organic matter.

A1—0 to 3 inches, black (N 2/0) loam; weak fine granular structure; friable, nonsticky, nonplastic; 5 percent coarse fragments; strongly acid; abrupt smooth boundary.

A2—3 to 4 inches, brown (10YR 5/3) loam; weak fine granular structure; friable, nonsticky, nonplastic; 10 percent coarse fragments; strongly acid; abrupt wavy boundary.

B1—4 to 7 inches, yellowish brown (10YR 5/6) channery loam; weak fine granular structure; friable, nonsticky, slightly plastic; 15 percent coarse fragments; strongly acid; clear wavy boundary.

B21t—7 to 13 inches, yellowish brown (10YR 5/8) channery clay loam; moderate fine and medium subangular blocky structure; friable, nonsticky, slightly plastic; many thin clay films on ped faces and in pores; 15 percent coarse fragments; strongly acid; clear wavy boundary.

B22t—13 to 19 inches, yellowish brown (10YR 5/8) channery clay loam; moderate medium and coarse subangular blocky structure; friable, slightly sticky, slightly plastic; many moderately thick clay films on ped faces and in pores; 15 percent coarse fragments; strongly acid; gradual wavy boundary.

B23t—19 to 27 inches, brownish yellow (10YR 6/8) channery clay loam; moderate fine and medium

subangular blocky structure; friable, slightly sticky, plastic; few thin clay films on ped faces and in pores; 20 percent coarse fragments; strongly acid; gradual wavy boundary.
C—27 to 47 inches, yellowish brown (10YR 5/6) channery sandy loam; massive; very friable, nonsticky, nonplastic; 30 percent coarse fragments; strongly acid; clear wavy boundary.
R—47 inches, reddish yellow (7.5YR 6/6) sandstone bedrock.

The solum thickness ranges from 24 to 40 inches. The depth to bedrock ranges from 3-1/2 to 7 feet. The coarse fragment content ranges from 3 to 20 percent in the A horizon, 5 to 20 percent in the B horizon, and 30 to 85 percent in the C horizon. Unless limed, the soil ranges from extremely acid to strongly acid throughout.

The A1 horizon is neutral or has hue of 10YR, value of 2, and chroma of 0 through 2. The A2 horizon has hue of 10YR, value of 5, and chroma of 3 through 6. The fine-earth texture is dominantly loam but is sandy loam in some areas.

The B horizon has hue of 7.5YR and 10YR, value of 5 and 6, and chroma of 4 through 8. The fine-earth textures are loam, sandy loam, and clay loam; the particle-size control section is 20 to 40 percent silt and 18 to 30 percent clay.

The C horizon has hue of 7.5YR and 10YR, value of 5 and 6, and chroma of 4 through 6. The fine-earth textures are sandy loam to clay loam.

Dystrochrepts

Dystrochrepts are deep, somewhat poorly drained to excessively drained soils. They formed in materials derived mostly from sandstone and some shale. The soils are on mountain ridgetops and side slopes and are on flood plains. Slopes are 0 to 70 percent.

Dystrochrepts are associated on the landscape with Laidig, Meckesville, Buchanan, and Ernest soils and Rubble land on uplands and with Lobdell and Holly soils and Udifluvents on flood plains. Dystrochrepts do not have the argillic horizon or fragipan typical of the Laidig, Meckesville, Buchanan, and Ernest soils. Dystrochrepts have a cambic horizon which is not in the Lobdell or Holly soils or the Udifluvents.

Because of the variability of these soils, a typical pedon is not described. These soils generally have a solum that ranges from 10 to 60 inches thick. The depth to bedrock is 1-1/2 feet to more than 5 feet. Coarse fragments of mostly shale and sandstone make up 0 to 90 percent of individual horizons, but the average for the solum is 35 to 90 percent. The soil is strongly acid to extremely acid throughout. Base saturation is less than 60 percent in the B and C horizons.

The A horizon dominantly has hue of 5YR to 2.5Y, value of 2 through 4, and chroma of 0 through 4. The fine-earth textures are loam or sandy loam. The A horizon, where present, is as much as 10 inches thick.

The B horizon is a cambic horizon. In some areas the B horizon has mottles with chroma of 2 or less below a depth of 12 inches. The horizon dominantly has hue of 5YR through 2.5Y, value of 4 through 7, and chroma of 2 through 8. The fine-earth textures are loam or sandy loam. The B horizon is 10 to 50 inches thick.

The C horizon colors are variable and the fine-earth textures range from loam through sandy loam and loamy sand.

Edom series

Soils of the Edom series are fine, illitic, mesic Typic Hapludalfs. The soils are deep and well drained and are on convex, rolling slopes on dissected uplands. The soils formed in residuum weathered from calcareous shale and thin-bedded limestone. Slopes are 3 to 25 percent.

Edom soils are associated on the landscape with Mertz, Hublersburg, Wharton Variant, Clarksburg, Opequon, and Weikert soils. Edom soils have a thinner solum than the Mertz, Hublersburg, or Clarksburg soils and are deeper to bedrock than the Opequon or Weikert soils. Edom soils are well drained, and Wharton Variant soils are somewhat poorly drained.

Typical pedon of Edom silty clay loam, 15 to 25 percent slopes, in a hayfield, 1,000 feet northwest of Route T764 on Kettle Road, and 100 feet north-northeast on a trailer park road, in a road cut on the east side of road:

Ap—0 to 6 inches, dark grayish brown (10YR 4/2) silty clay loam; moderate medium granular structure; friable, slightly sticky, plastic; 10 percent coarse fragments; neutral; abrupt smooth boundary.
B21t—6 to 11 inches, dark brown (7.5YR 4/4) silty clay loam; moderate medium blocky structure; friable, sticky, plastic; common thick clay films on ped faces and in pores; 5 percent coarse fragments; neutral; clear wavy boundary.
B22t—11 to 24 inches, reddish brown (5YR 4/4) silty clay; moderate medium blocky structure; friable, sticky, plastic; continuous thick clay films on ped faces and in pores; 5 percent coarse fragments; neutral; clear wavy boundary.
C1—24 to 36 inches, reddish brown (5YR 4/4) very shaly silty clay; massive; friable, sticky, plastic; 60 percent coarse fragments; neutral; clear wavy boundary.
C2—36 to 42 inches, reddish brown (5YR 4/4) very shaly silty clay; massive; friable, sticky, plastic; 80 percent coarse fragments; neutral; abrupt wavy boundary.
R—42 inches, light brownish gray (10YR 6/2) thin-bedded limestone.

The solum thickness ranges from 20 to 40 inches. The depth to bedrock is more than 3-1/2 feet. Coarse fragments make up 2 to 25 percent of the solum and 20

to 90 percent of the C horizon. Reaction is slightly acid or neutral throughout.

The Ap horizon has hue of 10YR and 7.5YR, value of 3 and 4, and chroma of 2 through 4. The fine-earth texture is dominantly silty clay loam but is silt loam in some areas.

The B horizon has hue of 7.5YR and 5YR, value of 4 and 5, and chroma 4 through 6. The fine-earth textures are silty clay loam and silty clay in the upper part of the solum and silty clay and clay in the lower part. The B horizon averages between 40 and 60 percent clay in the particle-size control section.

The C horizon has hue of 5YR through 10YR, value of 4 through 6, and chroma of 3 through 8. The fine-earth textures are silty clay loam and silty clay.

Ernest series

Soils of the Ernest series are fine-loamy, mixed, mesic Aquic Fragiudults. The soils are deep and moderately well drained and are at the base of steep slopes and in drainageways of shale ridges. The soils formed in colluvium weathered from acid shale and some sandstone. Slopes are 3 to 15 percent.

Ernest soils are associated on the landscape with Berks, Weikert, Gilpin, Blairton, Brinkerton, and Bedington soils. The Berks, Gilpin, Weikert, and Bedington soils are well drained, and the Brinkerton soils are poorly drained. The Blairton soils are moderately deep.

Typical pedon of Ernest silt loam, 3 to 8 percent slopes, 1/2 mile east of Geeseytown and U.S. Route 22 on Route 07016, to Route T430, in a road bank on the north side of the road:

Ap—0 to 9 inches, dark grayish brown (10YR 4/2) silt loam, weak fine granular structure; friable, nonsticky, nonplastic; 5 percent coarse fragments; slightly acid; abrupt smooth boundary.

B21t—9 to 17 inches, yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; continuous moderately thick clay films on ped faces and in pores; 10 percent coarse fragments; strongly acid; clear wavy boundary.

B22t—17 to 27 inches, light yellowish brown (10YR 6/4) silty clay loam; many coarse faint light brownish gray (10YR 6/2) mottles and common medium distinct strong brown (7.5YR 5/6) mottles; moderate coarse subangular blocky structure; friable, slightly sticky, slightly plastic; continuous thick clay films on ped faces and in pores; 10 percent coarse fragments; strongly acid; clear wavy boundary.

Bx—27 to 48 inches, strong brown (7.5YR 5/6) silty clay loam; many coarse distinct light brownish gray (10YR 6/2) mottles; very coarse prismatic structure parting to weak medium subangular blocky; very firm, brittle, slightly sticky, slightly plastic; continuous moderately thick clay films on prism faces; 5 percent coarse fragments; strongly acid; gradual boundary.

C—48 to 60 inches, strong brown (7.5YR 5/6) silty clay loam; many coarse distinct grayish brown (2.5Y 5/2) and gray (N 6/0) mottles; massive; firm, slightly sticky, slightly plastic; 10 percent coarse fragments; strongly acid.

The solum thickness ranges from 36 to 72 inches. The depth to bedrock is more than 5 feet, and the depth to the fragipan ranges from 22 to 30 inches. Mottles with chroma of 2 or less are at a depth of 13 to 20 inches. Coarse fragments make up 5 to 20 percent of he B horizon and 5 to 30 percent of the Bx and C horizons. Unless limed, the soil is very strongly acid and strongly acid throughout.

The Ap horizon has hue of 10YR and 7.5YR, value of 4 and 5, and chroma of 2 through 4. It is silt loam.

The B and Bx horizons have hue of 10YR and 7.5YR, value of 4 through 6, and chroma of 3 through 6. Mottles have hue of 5YR through 5Y, value of 4 through 7, and chroma of 1 through 8. The fine-earth textures are silt loam and silty clay loam.

The C horizon has hue of 10YR and 7.5YR, value of 4 and 5, and chroma of 2 through 6. Mottles have hue of 5YR through 2.5Y or are neutral and have value of 5 and 6 and chroma of 0 through 4. The fine-earth textures are silt loam and silty clay loam.

Gilpin series

Soils of the Gilpin series are fine-loamy, mixed, mesic Typic Hapludults. The soils are moderately deep and well drained and are on convex side slopes of ridges on the Allegheny Plateau. The soils formed in residuum weathered from acid, yellow and brown clay shale, siltstone, and sandstone. Slopes are 3 to 25 percent.

Gilpin soils are associated on the landscape with Cavode, Wharton, and Weikert soils. The Weikert soils are shallow, the Cavode soils are somewhat poorly drained, and the Wharton soils are moderately well drained.

Typical pedon of Gilpin channery silt loam, 3 to 8 percent slopes, in a field, 1/2 mile south of Tunnel Hill on Route 07018, 400 feet east of road:

Ap—0 to 9 inches, very dark grayish brown (10YR 3/2) channery silt loam; weak fine granular structure; very friable, nonsticky, nonplastic; 20 percent coarse fragments; very strongly acid; abrupt smooth boundary.

B21t—9 to 15 inches, yellowish brown (10YR 5/6) channery light silty clay loam; weak fine subangular blocky structure; very friable, slightly sticky, slightly plastic; common moderately thick clay films on ped faces and in pores; 20 percent coarse fragments; strongly acid; clear wavy boundary.

B22t—15 to 25 inches, yellowish brown (10YR 5/6) shaly light silty clay loam; weak fine and medium

subangular blocky structure; friable, slightly sticky, plastic; many moderately thick clay films on peds and in pores; 15 percent coarse fragments; strongly acid; clear wavy boundary.

C—25 to 31 inches, yellowish brown (10YR 5/6) very shaly silt loam; massive; firm, slightly sticky, slightly plastic; common thin clay films on rock fragments; 80 percent coarse fragments; strongly acid; abrupt wavy boundary.

R—31 inches, grayish brown (2.5Y 5/2) fractured shale.

The solum thickness ranges from 20 to 30 inches. The depth to bedrock ranges from 20 to 40 inches. Coarse fragments make up 15 to 40 percent of the solum and 30 to 85 percent of the C horizon. The content of coarse fragments averages less than 35 percent in the particle-size control section. Reaction is very strongly acid or strongly acid throughout the soil.

The Ap horizon has hue of 10YR, value of 3 through 5, and chroma of 2 through 4. The fine-earth texture is dominantly silt loam but is loam in some areas.

The Bt horizon has hue of 10YR and 7.5YR, value of 5, and chroma of 4 through 8. The fine-earth textures are silt loam, loam, and light silty clay loam.

The C horizon has hue of 7.5YR through 2.5Y, value of 3 through 5, and chroma of 3 through 6. The fine-earth textures are silt loam or loam.

Hagerstown series

Soils of the Hagerstown series are fine, mixed, mesic Typic Hapludalfs. The soils are deep and well drained and are on undulating slopes of upland valleys. The soils formed in residuum weathered from nearly pure limestone. Slopes are 0 to 50 percent.

Hagerstown soils are associated on the landscape with Hublersburg, Opequon, Edom, Murrill, and Clarksburg soils. Hagerstown soils are less acid in the lower part of the B horizon and have fewer coarse fragments throughout than the Hublersburg soils, have a thicker solum than the Edom soils, are deeper to bedrock than the Opequon soils, and have more clay and less sand than the Murrill soils. Hagerstown soils do not have the fragipan that is typical of the Clarksburg soils.

Typical pedon of Hagerstown silt loam, in an area of Hagerstown-Rock outcrop complex, 0 to 8 percent slopes, in a hayfield, 0.4 mile south of PA Route 36 on Route 07005, 600 feet east of road near the Roaring Spring water tower:

Ap—0 to 8 inches, dark grayish brown (10YR 4/2) heavy silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; 10 percent coarse fragments; neutral; abrupt smooth boundary.

B21t—8 to 18 inches, yellowish red (5YR 5/6) silty clay; few black coatings; moderate fine and medium subangular blocky structure; friable, sticky, plastic; moderately thick continuous clay films on ped faces and in pores; 5 percent coarse fragments; neutral; clear wavy boundary.

B22t—18 to 29 inches, yellowish red (5YR 5/6) silty clay; common black coatings; moderate medium subangular blocky structure; friable, sticky, plastic; thick continuous clay films on ped faces; moderately thick continuous coatings in pores; 10 percent coarse fragments; slightly acid; clear wavy boundary.

B23t—29 to 41 inches, yellowish red (5YR 4/6) silty clay loam; few black coatings; moderate medium subangular blocky structure; friable, sticky, plastic; thick continuous clay films on ped faces and in pores; 5 percent coarse fragments; medium acid; clear wavy boundary.

B24t—41 to 51 inches, yellowish red (5YR 5/6) light silty clay loam; few black coatings; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; thin continuous clay films on ped faces; thin common clay films in pores; medium acid; clear wavy boundary.

B3—51 to 60 inches, yellowish red (5YR 5/6) light silty clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few thin clay films on ped faces and in pores; slightly acid; abrupt wavy boundary.

R—60 inches, yellowish brown (10YR 5/4) thin-bedded limestone.

The solum thickness ranges from 40 to 60 inches. The depth to bedrock is more than 3-1/2 feet. Coarse fragments make up 0 to 15 percent of the soil. Unless limed, the soil is strongly acid or very strongly acid in the upper part of the solum and strongly acid through neutral in the lower part.

The Ap horizon has hue of 10YR, value of 3 through 5, and chroma of 2 through 4. It is dominantly silt loam but is silty clay loam in some areas.

The B horizon has hue of 5YR and 2.5YR, value of 4 and 5, and chroma of 4 through 8. It is clay, silty clay, and silty clay loam and is more than 35 percent clay in the particle-size control section.

Hazleton series

Soils of the Hazleton series are loamy-skeletal, mixed, mesic Typic Dystrochrepts. The soils are deep and well drained and are on benches and side slopes on the Allegheny Plateau and on ridges and valleys on mountains. The soils formed in residuum weathered from brown and gray sandstone. Slopes are 3 to 70 percent.

Hazleton soils are associated on the landscape with Clymer, Leetonia, and Laidig soils. Hazleton soils do not have the argillic horizon typical of the Clymer soils, do not have a spodic horizon typical of the Leetonia soils, and do not have the fragipan typical of the Laidig soils.

Typical pedon of Hazleton channery sandy loam, in a wooded area of Hazleton very stony sandy loam, 3 to 8

percent slopes, 1/2 mile north of PA Route 453 on Hoovers Lane, east side of the power line right-of-way:

O2—2 inches to 0, partially decomposed leaf litter.
A1—0 to 2 inches, black (N 2/0) sandy loam; weak fine granular structure; friable, nonsticky, nonplastic; 5 percent coarse fragments; very strongly acid; abrupt wavy boundary.
A2—2 to 6 inches, gray (10YR 5/1) channery sandy loam; weak fine granular structure; friable, nonsticky, nonplastic; 20 percent coarse fragments; very strongly acid; abrupt wavy boundary.
B21hir—6 to 8 inches, dark reddish brown (5YR 3/3) loam; weak fine subangular blocky structure; firm, nonsticky, nonplastic; 10 percent coarse fragments; very strongly acid; clear wavy boundary.
B22—8 to 14 inches, strong brown (7.5YR 5/6) channery loam; weak fine subangular blocky structure; friable, nonsticky, nonplastic; 25 percent coarse fragments; very strongly acid; gradual wavy boundary.
B23—14 to 22 inches, strong brown (7.5YR 5/6) channery loam; weak fine subangular blocky structure; friable, nonsticky, nonplastic; 40 percent coarse fragments; very strongly acid; gradual wavy boundary.
B24—22 to 33 inches, strong brown (7.5YR 5/6) very channery loam; weak fine and medium subangular blocky structure; friable, nonsticky, nonplastic; 50 percent coarse fragments; very strongly acid; gradual wavy boundary.
B3—33 to 49 inches, strong brown (7.5YR 5/6) very channery sandy loam; weak fine granular structure; friable, nonsticky, nonplastic; 65 percent coarse fragments; very strongly acid; gradual wavy boundary.
C—49 to 60 inches, yellowish brown (10YR 5/6) very channery sandy loam; massive; firm, nonsticky, nonplastic; 70 percent coarse fragments; very strongly acid.

The solum thickness ranges from 28 to 50 inches. The depth to bedrock is more than 3-1/2 feet. Coarse fragments make up 5 to 20 percent of the A horizon, 10 to 70 percent of the B horizon, and 60 to 80 percent of the C horizon. The coarse fragment content averages more than 35 percent in the particle-size control section. Unless limed, the soil is extremely acid and very strongly acid throughout.

The A1 horizon has hue of 7.5YR or is neutral and has value of 2 and 3 and chroma of 0 through 2. The A2 horizon has hue of 10YR, value of 4 and 5, and chroma of 1 through 3. The fine-earth texture is dominantly sandy loam but is loam in some areas.

The B horizon has hue of 5YR through 10YR, value of 3 through 6, and chroma of 3 through 8. The 5YR hue is limited to the Bhir horizon. The B2 horizon has fine-earth textures of sandy loam and loam. The B3 horizon has fine-earth textures of sandy loam and loamy sand.

The C horizon has hue of 10YR and 7.5YR, value of 4 and 5, and chroma of 4 through 6. The fine-earth textures are loamy sand, loam, and sandy loam.

Holly series

Soils of the Holly series are fine-loamy, mixed, nonacid, mesic Typic Fluvaquents. The soils are deep and poorly drained and are on flood plains throughout the county. The soils formed in alluvium washed from uplands underlain by sandstone, shale, and limestone. Slopes range from 0 to 3 percent.

The Holly soils are associated on the landscape with Linden, Basher, and Lobdell soils and Udifluvents and Dystrochrepts. The Linden soils are well drained, the Basher soils are moderately well drained and somewhat poorly drained, the Lobdell soils are moderately well drained, and the Udifluvents and Dystrochrepts are somewhat poorly drained to well drained.

Typical pedon of Holly silt loam, in a pasture, 1/4 mile south on U.S. Route 220 from its intersection with Route 07046, 1,000 feet west on an unnamed road, 200 feet south of the road:

Ap—0 to 6 inches, dark gray (10YR 4/1) silt loam; moderate medium granular structure; friable, nonsticky, nonplastic; neutral; abrupt smooth boundary.
Blg—6 to 10 inches, dark gray (10YR 4/1) silt loam; common fine faint yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; friable, nonsticky, slightly plastic; neutral; abrupt smooth boundary.
B21—10 to 15 inches, gray (10YR 5/1) silty clay loam; many medium distinct strong brown (7.5YR 5/6) mottles; weak coarse subangular blocky structure; friable, slightly sticky, slightly plastic; neutral; clear wavy boundary.
B22g—15 to 29 inches, gray (10YR 6/1) silty clay loam; many coarse distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; neutral; clear wavy boundary.
C1g—29 to 38 inches, gray (10YR 6/1) sandy loam; many coarse distinct strong brown (7.5YR 5/6) mottles; massive; friable, nonsticky, nonplastic; neutral; gradual wavy boundary.
C2g—38 to 43 inches, very dark gray (N 3/0) loam; few medium distinct light yellowish brown (10YR 6/4) mottles; massive; very friable, nonsticky, nonplastic; neutral; abrupt smooth boundary.
IIC3g—43 to 60 inches, very dark gray (N 3/0) cobbly silty clay loam; massive; firm; 40 percent coarse fragments; neutral.

The solum thickness ranges from 24 to 30 inches. The depth to bedrock is 5 feet or more, and the depth to contrasting material is 40 inches or more. Coarse

fragments make up 0 to 15 percent of the horizons above the IIC horizon and 15 to 50 percent of the IIC horizon. Reaction is slightly acid or neutral throughout.

The A horizon has hue of 10YR, value of 4, and chroma of 1 and 2. It is dominantly silt loam but is loam in some areas.

The B horizon has hue of 10YR and 2.5Y or is neutral and has value of 4 through 6 and chroma of 0 through 2. Where the value is 5 or less, the chroma is 1 or less. Where the value is more than 5, the chroma is 2 or less. The horizon is silt loam, sandy loam, and silty clay loam.

The C horizon has hue of 10YR through 5Y or is neutral and has value of 3 through 6 and chroma of 0 through 2. The fine-earth textures are sandy loam, loam, silt loam, and silty clay loam.

Hublersburg series

Soils of the Hublersburg series are clayey, illitic, mesic Typic Hapludults. The soils are deep and well drained and are on rolling and undulating slopes of the upland valleys. The soils formed in residuum weathered from impure limestone. Slopes are 3 to 25 percent.

Hublersburg soils are associated on the landscape with Opequon, Mertz, Clarksburg, Hagerstown, and Morrison soils. The Hublersburg soils are deeper to bedrock than the Opequon soils, have fewer coarse fragments in the B horizon than the Mertz soils, do not have the fragipan of the Clarksburg soils, and have less sand and more clay than the Morrison soils. Hublersburg soils have lower base than Hagerstown soils.

Typical pedon of Hublersburg cherty silt loam, 3 to 8 percent slopes, in a cultivated field 1/2 mile east of PA Route 260 on Route T459, north side of road:

Ap—0 to 10 inches, dark brown (7.5YR 4/4) cherty silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; 20 percent coarse fragments; very strongly acid; abrupt smooth boundary.

B21t—10 to 15 inches, yellowish red (5YR 5/6) cherty silty clay loam; moderate fine subangular blocky structure; friable, sticky, plastic; common black coatings on ped faces; continuous thin clay films on ped faces and common thin clay films in pores; 20 percent coarse fragments; very strongly acid; clear wavy boundary.

B22t—15 to 20 inches, yellowish red (5YR 5/6) light silty clay; moderate fine subangular blocky structure; friable, sticky, plastic; common black coatings on ped faces; continuous moderately thick clay films on ped faces and in pores; 10 percent coarse fragments; very strongly acid; abrupt wavy boundary.

B23t—20 to 27 inches, yellowish red (5YR 5/8) cherty silty clay; moderate fine subangular blocky structure; friable to firm, sticky, plastic; many black coatings on ped faces; continuous moderately thick clay films on ped faces and in pores; 15 percent coarse fragments; very strongly acid; gradual wavy boundary.

B24t—27 to 35 inches, yellowish red (5YR 5/8) silty clay; moderate fine and medium subangular blocky structure; friable, sticky, plastic; many black coatings on ped faces; continuous thick clay films on ped faces and in pores; 5 percent coarse fragments; very strongly acid; clear wavy boundary.

B25t—35 to 49 inches, yellowish red (5YR 5/8) heavy silty clay loam variegated with strong brown (7.5YR 5/8); moderate medium subangular blocky structure; friable, sticky, plastic; common black coatings on ped faces; continuous moderately thick clay films on ped faces and in pores; 10 percent coarse fragments; very strongly acid; clear wavy boundary.

B26t—49 to 60 inches, yellowish red (5YR 5/8) silty clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, plastic; few black coatings on ped faces; many moderately thick clay films on ped faces and common moderately thick clay films in pores; 10 percent coarse fragments; very strongly acid.

The solum thickness and depth to bedrock are more than 60 inches. Coarse fragments make up 5 to 25 percent of the soil. Reaction is very strongly acid or strongly acid throughout in unlimed areas.

The Ap horizon has hue of 7.5YR and 10YR, value of 3 and 4, and chroma of 2 through 4. The fine-earth textures are silt loam and silty clay loam.

The B horizon has hue of 5YR through 10YR, value of 5 and 6, and chroma of 4 through 8. The fine-earth textures are silty clay loam, clay, and silty clay; the particle-size control section is more than 35 percent clay.

Laidig series

Soils of the Laidig series are fine-loamy, mixed, mesic Typic Fragiudults. The soils are deep and well drained and are on mountain slopes and upper foot slopes. The soils formed in colluvium weathered from sandstone and some shale. Slopes are 3 to 45 percent.

Laidig soils are associated on the landscape with Hazleton, Berks, Buchanan, and Murrill soils. The Hazleton, Berks, and Murrill soils do not have a fragipan. The Buchanan soils are moderately well drained and somewhat poorly drained.

Typical pedon of Laidig channery loam, in a wooded area of Laidig extremely stony loam, 8 to 25 percent slopes, 3/4 mile southeast of U.S. Route 220 on Route 07053, 1/4 mile south on unimproved road, east side of road:

A1—0 to 2 inches, black (10YR 2/1) channery loam; weak very fine granular structure; friable, nonsticky, nonplastic; 15 percent coarse fragments; very strongly acid; abrupt wavy boundary.

A2—2 to 6 inches, light yellowish brown (10YR 6/4) channery loam; weak very fine granular structure; friable, nonsticky, nonplastic; 15 percent coarse fragments; strongly acid; abrupt wavy boundary.

B1—6 to 14 inches, yellowish brown (10YR 5/6) channery silt loam; weak fine subangular blocky structure; friable, slightly sticky, nonplastic; 20 percent coarse fragments; strongly acid; clear wavy boundary.
B21t—14 to 20 inches, brownish yellowish (10YR 6/6) channery silt loam; weak medium and fine subangular blocky structure; firm, slightly sticky, slightly plastic; few thin clay films on ped faces; many thin clay films in pores; 20 percent coarse fragments; strongly acid; gradual wavy boundary.
B22t—20 to 32 inches, strong brown (7.5YR 5/8) channery heavy loam; weak medium and fine subangular blocky structure; firm, slightly sticky, slightly plastic; common thin clay films on ped faces and in pores; 20 percent coarse fragments; strongly acid; gradual wavy boundary.
Bx—32 to 71 inches, variegated strong brown (7.5YR 5/6 and 5/8) channery heavy loam; few medium and coarse distinct light gray (10YR 7/2) mottles; weak very coarse prismatic structure parting to weak thin platy; very firm, brittle, nonsticky, nonplastic; few thin clay films on secondary ped faces; 30 percent coarse fragments; strongly acid.

The solum thickness ranges from 60 to 80 inches or more. The depth to bedrock is more than 5 feet. The depth to the fragipan is 32 to 48 inches. Mottles with chroma of 2 or more are at a depth of more than 30 inches. Coarse fragments make up 15 to 30 percent of the solum. Unless limed, the soil is extremely acid to strongly acid throughout.

The A1 horizon has hue of 10YR, value of 2 through 4, and chroma of 1 through 3. The A2 horizon has hue of 10YR and 7.5YR, value of 5 and 6, and chroma of 3 through 6. The fine-earth texture is dominantly loam but is sandy loam or silt loam in places.

The B1 and B2 horizons have hue of 7.5YR and 10YR, value of 4 through 6, and chroma of 4 through 8. The fine-earth textures are silt loam, sandy clay loam, and loam.

The Bx horizon has hue of 5YR through 10YR, value of 4 and 5, and chroma of 4 through 8 and is mottled. The fine-earth textures are heavy loam, silt loam, and sandy clay loam.

Leck Kill series

Soils of the Leck Kill series are fine-loamy, mixed, mesic Typic Hapludults. The soils are deep and well drained and are on the tops and side slopes of highly dissected ridges. The soils formed in residuum weathered from red shale. Slopes are 3 to 60 percent.

Leck Kill soils are associated on the landscape with Bedington, Meckesville, and Albrights soils. Leck Kill soils have a redder B horizon than the Bedington soils and do not have the fragipan typical of the Meckesville and Albrights soils.

Typical pedon of Leck Kill channery silt loam, 8 to 15 percent slopes, in an area of idle land, 1/2 mile west on farm land from Puzzletown to petroleum pipe line, 50 feet northeast of power pole BE 16-7:

Ap—0 to 12 inches, dark reddish brown (5YR 3/4) channery silt loam; weak fine granular structure, friable, slightly sticky, nonplastic; 15 percent coarse fragments; very strongly acid; abrupt smooth boundary.
B1—12 to 22 inches, dark reddish brown (5YR 3/4) channery silt loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; 15 percent coarse fragments; strongly acid; clear wavy boundary.
B21t—22 to 31 inches, reddish brown (2.5YR 4/4) shaly silty clay loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; many moderately thick clay films on ped faces and in pores; 15 percent coarse fragments; strongly acid; clear wavy boundary.
B22t—31 to 38 inches, reddish brown (2.5YR 4/4) shaly silty clay loam; weak medium and fine subangular blocky structure; friable, slightly sticky, slightly plastic; common moderately thick clay films on peds and in pores; 35 percent coarse fragments; strongly acid; clear wavy boundary.
C—38 to 45 inches, reddish brown (2.5YR 4/4) very shaly silt loam; massive; firm, slightly sticky, nonplastic; 90 percent coarse fragments; strongly acid; abrupt wavy boundary.
R—45 inches, very dusky red (2.5YR 2/2) rippable shale and sandstone bedrock.

The solum thickness ranges from 24 to 40 inches and the depth to bedrock from 3-1/2 to 6 feet. Coarse fragments make up 15 to 25 percent of the Ap and B1 horizons, 15 to 35 percent of the B2t horizon, and 60 to 90 percent of the C horizon. Unless limed, the soil is very strongly acid and strongly acid throughout.

The Ap horizon has hue of 2.5YR and 5YR, value of 3 and 4, and chroma of 2 through 4. The fine-earth texture is dominantly silt loam but is loam in some areas.

The B horizon has hue of 10R through 5YR, value of 3 and 4, and chroma of 4 through 6. The fine-earth textures are silt loam, loam, and silty clay loam.

The C horizon has hue of 10R and 2.5YR, value of 3 and 4, and chroma of 4 through 6. The fine-earth textures are silt loam and clay loam.

Leetonia series

Soils of the Leetonia series are sandy-skeletal, siliceous, mesic Entic Haplorthods. The soils are deep and well drained and are on mountaintops and higher elevations of the Allegheny Plateau. The soils formed in residuum weathered from quartzite and sandstone. Slopes are 3 to 8 percent.

The Leetonia soils are associated on the landscape with Hazleton, Clymer, Laidig, and Lehew soils. Leetonia soils have a spodic horizon not characteristic of the Hazleton, Clymer, Laidig, or Lehew soils.

Typical pedon of Leetonia flaggy loamy sand, 3 to 8 percent slopes, 1/4 mile south of Route 07069 on PA Route 860, 150 feet east of road:

A1—0 to 1 inch, black (N 2/0) flaggy loamy sand; weak fine granular structure; very friable, nonsticky, nonplastic; 30 percent coarse fragments; extremely acid; abrupt wavy boundary.

A2—1 to 14 inches, brown (7.5YR 5/2) flaggy loamy sand; single grain; loose, nonsticky, nonplastic; 45 percent coarse fragments; extremely acid; abrupt wavy boundary.

B21h—14 to 15 inches, dark reddish brown (5YR 3/3) channery loamy sand; single grain; loose, nonsticky, nonplastic; 30 percent coarse fragments; very strongly acid; abrupt wavy boundary.

B22ir—15 to 18 inches, dark reddish brown (5YR 3/4) channery loamy sand; massive; very firm, nonsticky, nonplastic; 30 percent coarse fragments; very strongly acid; clear wavy boundary.

B23—18 to 27 inches, strong brown (7.5YR 5/6) very channery loamy sand; weak fine granular structure; very friable, nonsticky, nonplastic; 50 percent coarse fragments; very strongly acid; clear wavy boundary.

B24—27 to 41 inches, brownish yellow (10YR 6/6) flaggy loamy sand; weak fine granular structure; very friable, nonsticky, nonplastic; 40 percent coarse fragments; very strongly acid; gradual wavy boundary.

C—41 to 60 inches, yellow (10YR 7/6) flaggy sand; massive; loose, nonsticky, nonplastic; 40 percent coarse fragments; very strongly acid.

The solum thickness ranges from 31 to 41 inches. The depth to bedrock is 5 feet or more. Coarse fragments make up 30 to 65 percent of the soil. Unless limed, the soil is extremely acid and very strongly acid throughout.

The A1 horizon has hue of 5YR through 10YR, value of 2, and chroma of 0 and 1. The fine-earth texture is dominantly loamy sand but is sand in some areas. The A2 horizon has hue of 5YR and 7.5YR, value of 5 and 6, and chroma of 2. The fine-earth texture is dominantly loamy sand but is sand in some areas.

The Bh and Bir horizons have hue of 5YR and 2.5YR and value and chroma of 2 through 4. The B2 horizon has hue of 10YR and 7.5YR, value of 5 and 6, and chroma of 6. The fine-earth textures are sand and loamy sand.

The C horizon has hue of 10YR, value of 6 and 7, and chroma of 6. The fine-earth textures are sand and loamy sand.

Lehew series

Soils of the Lehew series are loamy-skeletal, mixed, mesic Typic Dystrochrepts. The soils are moderately deep and well drained to excessively drained. They are on mountain ridges. The soils formed in residuum weathered from red sandstone. Slopes are 8 to 50 percent.

Lehew soils are associated on the landscape with Leetonia, Laidig, and Hazleton soils. The Leetonia, Laidig, and Hazleton soils are deep.

Typical pedon of Lehew gravelly loam, in an area of Lehew very stony loam, 8 to 25 percent slopes, 30 feet north of Route 07022, on Lock Mountain:

O1—1 to 1/2 inch, leaf litter.

O2—1/2 inch to 0, partially decomposed organic material.

A1—0 to 1 inch, dark brown (7.5YR 4/2) gravelly loam; weak very fine granular structure; friable, nonsticky, nonplastic; 20 percent coarse fragments; very strongly acid; abrupt smooth boundary.

A2—1 to 5 inches, brown (7.5YR 5/4) gravelly loam; weak very fine granular structure; friable, nonsticky, nonplastic; 20 percent coarse fragments; strongly acid; abrupt smooth boundary.

B1—5 to 10 inches, reddish brown (5YR 5/4) gravelly loam; weak fine subangular blocky structure; friable, nonsticky, nonplastic; 30 percent coarse fragments; strongly acid; clear wavy boundary.

B2—10 to 17 inches, reddish brown (2.5YR 5/4) gravelly fine sandy loam; friable, nonsticky, nonplastic; 35 percent coarse fragments; strongly acid; clear wavy boundary.

C—17 to 26 inches, reddish brown (2.5YR 5/4) very gravelly sandy loam; massive; friable, nonsticky, nonplastic; 75 percent coarse fragments; strongly acid.

R—26 inches, red (2.5YR 4/6) sandstone bedrock.

The solum is 15 to 30 inches thick. The depth to bedrock ranges from 20 to 40 inches. Coarse fragments make up 20 to 30 percent of the A horizon, 30 to 50 percent of the B horizon, and 40 to 80 percent of the C horizon. The coarse fragment content averages more than 35 percent in the particle-size control section. Reaction is very strongly acid and strongly acid throughout.

The A1 horizon has hue of 10YR and 7.5YR, value of 3 and 4, and chroma of 1 and 2. The fine-earth texture is dominantly loam but is sandy loam in some areas.

The B horizon has hue of 2.5YR and 5YR, value of 4 and 5, and chroma of 4 through 6. The fine-earth textures are loam and sandy loam.

The C horizon has hue of 2.5YR and 5YR, value of 4 and 5, and chroma of 2 through 4. The fine-earth textures are loamy sand and sandy loam.

Linden series

Soils of the Linden series are coarse-loamy, mixed, mesic Fluventic Dystrochrepts. The soils are deep and well drained and are on flood plains mostly along the Little Juniata and Frankstown Branch of the Juniata River. The soils formed in alluvium washed from uplands underlain by red sandstone and shale. Slopes are 0 to 3 percent.

Linden soils are associated on the landscape with Basher, Holly, and Monongahela soils. The Basher soils are moderately well drained and somewhat poorly drained, the Holly soils are poorly drained, and the Monongahela soils are moderately well drained and have a fragipan.

Typical pedon of Linden loam, in a cultivated area of Linden soils, 100 feet east of the intersection of U.S. Route 220 and township road T504, near Tipton:

Ap—0 to 12 inches, dark reddish gray (5YR 4/2) loam; weak fine granular structure; friable, nonsticky,nonplastic; neutral; abrupt wavy boundary.
B1—12 to 18 inches, reddish brown (5YR 4/4) loam; weak medium and coarse subangular blocky structure; friable, nonsticky, nonplastic; neutral; clear wavy boundary.
B2—18 to 30 inches, reddish brown (5YR 4/4) loam; moderate medium and coarse subangular blocky structure; firm, nonsticky, nonplastic; strongly acid; clear wavy boundary.
C1—30 to 45 inches, dark brown (7.5YR 4/4) fine sandy loam; massive; friable, nonsticky, nonplastic; 5 percent coarse fragments; strongly acid; clear wavy boundary.
C2—45 to 57 inches, dark brown (7.5YR 4/4) very gravelly sandy loam; single grain; loose, nonsticky, nonplastic; 60 percent coarse fragments; very strongly acid; abrupt wavy boundary.
C3—57 to 60 inches, dark brown (7.5YR 4/4) very gravelly sandy loam; single grain; loose, nonsticky, nonplastic; 80 percent coarse fragments; very strongly acid.

The solum thickness ranges from 24 to 45 inches. The depth to strongly contrasting material is more than 40 inches, and the depth to bedrock is more than 5 feet. Coarse fragments make up 0 to 10 percent of the Ap and B horizons, 5 to 25 percent of the C horizon above a depth of 40 inches, and 0 to 80 percent of the C horizon below a depth of 40 inches. The soil ranges from very strongly acid to medium acid throughout unless limed.

The Ap horizon has hue of 5YR through 10YR, value of 3 and 4, and chroma of 2 through 4. It is silt loam, loam, and fine sandy loam.

The B horizon has hue of 2.5YR and 5YR, value of 3 through 5, and chroma of 3 and 4. The fine-earth textures are silt loam, loam, fine sandy loam, and sandy loam.

The C horizon has hue of 5YR through 10YR and value and chroma of 3 and 4. The fine-earth textures are loam to fine sandy loam above a depth of 40 inches and sandy loam to sand below a depth of 40 inches.

Lobdell series

Soils of the Lobdell series are fine-loamy, mixed, mesic Fluvaquentic Eutrochrepts. The soils are deep and moderately well drained and are on flood plains in limestone valleys. The soils formed in alluvium washed from uplands underlain by limestone and calcareous shale. Slopes are 0 to 3 percent.

Lobdell soils are associated on the landscape with Linden and Holly soils and Udifluvents and Dystrochrepts on flood plains and with Hublersburg, Edom, and Opequon soils on uplands. Holly soils are poorly drained; Linden, Edom, Hublersburg, and Opequon soils are well drained; and Udifluvents and Dystrochrepts are somewhat poorly drained to well drained.

Typical pedon of Lobdell silt loam, in a pasture, 1/8 mile northeast of the intersection of PA Route 164 and Route T332, 200 feet south of a road along Plum Creek:

Ap—0 to 7 inches, dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable, nonsticky, nonplastic; neutral; abrupt smooth boundary.
B1—7 to 15 inches, dark brown (10YR 4/3) light silty clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; neutral; clear wavy boundary.
B2—15 to 29 inches, brown (10YR 5/3) light silty clay loam; many medium faint dark gray (10YR 4/1) mottles and few fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; neutral; abrupt smooth boundary.
Cg—29 to 60 inches, grayish brown (2.5Y 5/2) stratified gravelly very fine sandy loam and silt loam; many coarse prominent strong brown (7.5YR 5/6) mottles; massive; friable, nonsticky, nonplastic; 40 percent coarse fragments; neutral.

The solum thickness ranges from 25 to 35 inches, and the depth to bedrock is 6 feet or more. Coarse fragments make up 0 to 10 percent of the solum and 5 to 40 percent of the C horizon. Mottles with chroma of 2 or less are at a depth of 15 to 24 inches. In unlimed areas the soil is slightly acid and neutral throughout.

The A horizon has hue of 10YR, value of 4, and chroma of 2 and 3. It is dominantly silt loam but is sandy loam in some areas.

The B horizon has hue of 10YR, value of 4 and 5, and chroma of 3 and 4. It is silt loam, fine sandy loam, and light silty clay loam.

The C horizon has hue of 10YR through 5Y, value of 4 and 5, and chroma of 2 through 4 and is mottled. The fine-earth textures are commonly stratified sandy loam, silt loam, and light clay loam.

Meckesville series

Soils of the Meckesville series are fine-loamy, mixed, mesic Typic Fragiudults. The soils are deep and well drained and are on benches, on foot slopes, and in drainageways of mountains and shale ridges. The soils formed in colluvium weathered from red shale and sandstone. Slopes are 3 to 25 percent.

Meckesville soils are associated on the landscape with Laidig, Albrights, and Leck Kill soils. Meckesville soils have a redder hue above the fragipan than do the Laidig soils. Meckesville soils do not have the low-chroma mottles in the upper 10 inches of the argillic horizon that are characteristic of the Albrights soils. Meckesville soils have a fragipan that is not characteristic of the Leck Kill soils.

Typical pedon of Meckesville gravelly silt loam, in a wooded area of Meckesville very stony silt loam, 8 to 25 percent slopes, on Pennsylvania State Game Land 73, 4 miles south of Williamsburg on Route 07051, 3/4 mile northeast on Route T369, 200 feet west of feed plot no. 6:

O2—1/2 inch to 0, partially decomposed organic matter.
A1—0 to 2 inches, dark reddish brown (5YR 2/2) gravelly silt loam; weak fine granular structure; very friable, nonsticky, nonplastic; 15 percent coarse fragments; very strongly acid; abrupt wavy boundary.
A2—2 to 4 inches, dark reddish gray (5YR 4/2) gravelly silt loam; weak fine granular structure; friable, slightly sticky, nonplastic; 15 percent coarse fragments; very strongly acid; clear wavy boundary.
B1—4 to 7 inches, reddish brown (5YR 5/4) gravelly silty clay loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; 15 percent coarse fragments; strongly acid; gradual wavy boundary.
B21t—7 to 19 inches, reddish brown (5YR 5/4) gravelly silty clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; common thin clay films on ped faces and in pores; 15 percent coarse fragments; strongly acid; gradual wavy boundary.
B22t—19 to 29 inches, reddish brown (2.5YR 4/4) gravelly light clay loam; moderate fine and medium subangular blocky structure; firm, slightly sticky, slightly plastic; common moderately thick clay films in ped faces and in pores; 25 percent coarse fragments; strongly acid; gradual wavy boundary.
Bx1—29 to 52 inches, reddish brown (2.5YR 4/4) gravelly light clay loam; weak very coarse prismatic structure; very firm, brittle, slightly sticky, slightly plastic; common moderately thick clay films in pores; 30 percent coarse fragments; strongly acid; gradual wavy boundary.
Bx2—52 to 60 inches, weak red (10R 4/4) gravelly light clay loam; few fine faint reddish gray (10R 6/1) mottles; weak very coarse prismatic structure; very firm, brittle, slightly sticky, slightly plastic; few thin clay films in pores; 30 percent coarse fragments; very strongly acid.

The solum thickness ranges from 40 to 80 inches. The depth to bedrock is 6 feet or more, and the depth to the fragipan is 26 to 48 inches. The depth to mottles with chroma of 2 or less is more than 30 inches. Coarse fragments make up to 15 to 30 percent of the profile above the Bx horizon and from 15 to 40 percent of the Bx horizon. Reaction is very strongly acid and strongly acid throughout in unlimed areas.

The A horizon has hue of 5YR and 7.5YR and value and chroma of 2 through 4. The fine-earth texture is dominantly silt loam but is loam in some areas.

The Bt horizon has hue of 10R through 5YR, value of 4 and 5, and chroma of 3 through 6. The fine-earth textures are silt loam, silty clay loam, and light clay loam.

The Bx horizon has hue of 10R through 5YR, value of 3 and 4, and chroma of 4. The fine-earth textures are silty clay loam, light clay loam, and loam.

Mertz series

Soils of the Mertz series are loamy-skeletal, mixed, mesic Typic Hapludults. The soils are deep and well drained and are on ridgetops in limestone valleys. The soils formed in residuum weathered from impure limestone. Slopes are 3 to 25 percent.

Mertz soils are associated on the landscape with Vanderlip, Morrison, Edom, and Hublersburg soils. Mertz soils have more coarse fragments in the particle-size control section than any of these associated soils.

Typical pedon of Mertz channery silt loam 3 to 8 percent slopes, in a pasture, 1-1/2 miles north on Route 07021 from U.S. Route 22, 200 feet east of road:

Ap—0 to 10 inches, dark grayish brown (10YR 4/2) channery silt loam; moderate fine granular structure; friable, nonsticky, nonplastic; 20 percent coarse fragments; slightly acid; abrupt smooth boundary.
B21t—10 to 21 inches, light yellowish brown (10YR 6/4) channery light silty clay loam; moderate fine subangular blocky structure; friable, slightly sticky, slightly plastic; common moderately thick clay films on peds and in pores; 35 percent coarse fragments; slightly acid; gradual wavy boundary.
B22—21 to 43 inches, yellowish brown (10YR 5/4) very channery silty clay loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; common moderately thick clay films on ped faces and in pores; 50 percent coarse fragments; medium acid; gradual wavy boundary.
B23t—43 to 60 inches, yellowish brown (10YR 5/4) very channery silty clay loam; friable, slightly sticky, slightly plastic; many thick clay films on ped faces and in pores; 60 percent coarse fragments; strongly acid; gradual wavy boundary.

B3—60 to 80 inches, light yellowish brown (10YR 6/4) very channery light silty clay loam; few fine strong brown (7.5YR 5/8) and light gray (10YR 7/1) mottles; moderate fine subangular blocky structure; friable, slightly sticky, slightly plastic; few thin clay films on ped faces; 50 percent coarse fragments; strongly acid.

The solum thickness ranges from 44 to 80 inches. The depth to bedrock is more than 6 feet. Coarse fragments make up 20 to 50 percent of the upper part of the solum, 40 to 60 percent of the lower part of the solum, and 50 to 80 percent of the C horizon. The average coarse fragment content is more than 35 percent in the particle-size control section. Unless limed, the soil is neutral to strongly acid in the upper part of the solum and is very strongly acid and strongly acid in the lower part of the solum and in the C horizon.

The Ap horizon has hue of 10YR, value of 3 through 5, and chroma of 2 through 4. The fine-earth texture is dominantly silt loam but is loam in some areas.

The B and C horizons have hue of 10YR and 7.5YR, value of 5 and 6, and chroma of 4 through 8. The fine-earth textures are silty clay loam and heavy silt loam.

Monongahela series

Soils of the Monongahela series are fine-loamy, mixed mesic Typic Fragiudults. The soils are deep and moderately well drained and are on stream terraces throughout the county. The soils formed in old alluvium washed from upland soils underlain by shale and sandstone. Slopes range from 3 to 8 percent.

Monongahela soils are associated on the landscape with Tyler, Purdy, Linden, and Basher soils. The Tyler soils are somewhat poorly drained, and the Purdy soils are poorly drained. The Purdy, Basher, and Linden soils do not have a fragipan.

Typical pedon of Monongahela silt loam, 3 to 8 percent slopes, 1,500 feet west on Route 07012 from its intersection with Route 07011, 100 feet northeast of road:

Ap—0 to 6 inches, dark brown (10YR 4/3) silt loam; weak very fine granular structure; very friable, nonsticky, nonplastic; 10 percent coarse fragments; very strongly acid; abrupt smooth boundary.

B2t—6 to 20 inches, light yellowish brown (10YR 6/4) gravelly light silty clay loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; many thin clay films on ped faces; 15 percent coarse fragments; strongly acid; clear wavy boundary.

Bx1—20 to 36 inches, strong brown (7.5YR 5/6) silt loam; few fine faint pinkish gray (7.5YR 7/2) mottles; weak very coarse prismatic structure parting to weak medium subangular blocky; very firm, brittle, slightly sticky, slightly plastic; few thin clay films on prism faces; 10 percent coarse fragments; strongly acid; gradual wavy boundary.

Bx2—36 to 54 inches, light brown (7.5YR 6/4) silt loam; common medium faint pinkish gray (7.5YR 7/2) mottles and few fine faint strong brown (7.5YR 5/8) mottles; weak very coarse prismatic structure parting to weak coarse subangular blocky; very firm, brittle, sticky, plastic; continuous moderately thick clay films on prism faces; 5 percent coarse fragments; strongly acid; clear smooth boundary.

C—54 to 86 inches; strong brown (7.5YR 5/8) clay loam; many coarse distinct light gray (10YR 7/2) mottles; massive; firm, sticky, plastic; 10 percent coarse fragments; very strongly acid.

The solum thickness ranges from 40 to 72 inches. The depth to bedrock is 5 feet or more. The depth to the fragipan ranges from 20 to 30 inches. Mottles with chroma of 2 or less are at a depth of 20 to 30 inches. Coarse fragments make up 0 to 15 percent of the profile above the Bx horizon, 0 to 25 percent of the Bx horizon, and 10 to 40 percent of the C horizon. Unless limed, the soil is strongly acid and very strongly acid throughout.

The Ap horizon has hue of 10YR, value of 4 and 5, and chroma of 2 and 3. It is dominantly silt loam but is loam and fine sandy loam in some areas.

The B2t horizon has hue of 7.5YR and 10YR and value and chroma of 4 through 6. The fine-earth texture is light silty clay loam to loam.

The Bx horizon has hue of 7.5YR and 10YR, value of 5 and 6, and chroma of 4 through 6. The fine-earth textures range from silt loam to sandy clay loam.

The C horizon has hue of 7.5YR and 10YR, value of 5 and 6, and chroma of 3 through 8. The fine-earth textures range from sandy loam to clay loam.

Morrison series

Soils of the Morrison series are fine-loamy, mixed, mesic Ultic Hapludalfs. The soils are deep and well drained and are on undulating and rolling slopes of upland valleys. The soils formed in residuum derived from dolomitic limestone and calcareous sandstone. Slopes range from 3 to 50 percent.

Morrison soils are associated on the landscape with Hublersburg, Vanderlip, Buchanan, and Laidig soils. Morrison soils do not have the loamy sand B horizon characteristic of the Vanderlip soils, have more sand and less clay than the Hublersburg soils, and do not have the fragipan characteristic of the Buchanan and Laidig soils.

Typical pedon of Morrison sandy loam, 3 to 8 percent slopes, in a road cut in a wooded area, 1/2 mile northeast of Oreminea, 1/2 mile southeast on an unimproved road, south side of road:

A1—0 to 3 inches, very dark brown (10YR 2/2) sandy loam; weak fine granular structure; friable, nonsticky,

nonplastic; 5 percent coarse fragments; neutral; abrupt wavy boundary.
A2—3 to 6 inches, dark yellowish brown (10YR 4/4) sandy loam; weak fine granular structure; friable, nonsticky, nonplastic; 10 percent coarse fragments; slightly acid; clear wavy boundary.
B1—6 to 13 inches, yellowish brown (10YR 5/6) sandy loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; 10 percent coarse fragments; very strongly acid; clear wavy boundary.
B21t—13 to 26 inches, yellowish brown (10YR 5/6) gravelly sandy clay loam; weak medium subangular blocky structure; friable, slightly sticky, plastic; common thin clay films on ped faces and in pores; 15 percent coarse fragments; very strongly acid; clear wavy boundary.
B22t—26 to 30 inches, yellowish brown (10YR 5/6) gravelly sandy clay loam; moderate medium subangular blocky structure; friable, slightly sticky, plastic; common thin clay films on ped faces and in pores; 20 percent coarse fragments; strongly acid; gradual wavy boundary.
B23t—30 to 45 inches, yellowish brown (10YR 5/6) gravelly sandy clay loam; moderate medium subangular blocky structure; friable slightly sticky, plastic; common thin clay films on ped faces and in pores; 20 percent coarse fragments; strongly acid; gradual wavy boundary.
C—45 to 60 inches, variegated strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) gravelly sandy loam; massive; loose, nonsticky, nonplastic; few thin bands of sandy clay loam; 30 percent coarse fragments; medium acid.

The solum thickness ranges from 40 to 65 inches. The depth to bedrock is more than 6 feet. Coarse fragments make up from 5 to 15 percent of the A horizon and upper part of the B horizon and from 15 to 35 percent of the lower part of the B horizon and the C horizon. In unlimed areas the soil is very strongly acid and strongly acid in the upper part of the solum and is strongly acid and medium acid in the lower part of the solum and in the C horizon.

The A horizon has hue of 10YR and value and chroma of 2 through 4. It is sandy loam.

The B horizon has hue of 10YR and 7.5YR, value of 4 through 6, and chroma of 6 through 8. The fine-earth textures are loam, sandy loam, and sandy clay loam.

The C horizon has hue of 5YR through 10YR, value of 4 and 5, and chroma of 6 through 8. The fine-earth textures are sandy loam or loamy sand.

Murrill series

Soils of the Murrill series are fine-loamy, mixed, mesic Typic Hapludults. The soils are deep and well drained and are on mountain foot slopes in upland valleys. The soils formed in colluvium weathered from sandstone and some shale. Slopes range from 3 to 25 percent.

Murrill soils are associated on the landscape with Laidig, Opequon, and Buchanan soils. Murrill soils do not have the fragipan characteristic of the Laidig and Buchanan soils, and they are deeper than the Opequon soils.

Typical pedon of Murrill gravelly silt loam, 3 to 8 percent slopes, in a wooded area 1 mile west of PA Route 350 on Route T732 to unimproved private road, 2,000 feet southeast of Route T732:

O2—1 inch to 0, black partially decomposed leaf material.
A1—0 to 4 inches, very dark grayish brown (10YR 3/2) gravelly silt loam; weak fine granular structure; friable, nonsticky, nonplastic; 20 percent coarse fragments; strongly acid; clear wavy boundary.
A2—4 to 11 inches, brown (10YR 5/3) gravelly silt loam; weak medium subangular blocky structure; friable, nonsticky, slightly plastic; 25 percent coarse fragments; strongly acid; clear wavy boundary.
B21t—11 to 20 inches, strong brown (7.5YR 5/6) gravelly light silty clay loam; moderate medium and coarse subangular blocky structure; friable, slightly sticky, slightly plastic; continuous thin clay films on ped faces; 15 percent coarse fragments; strongly acid; gradual wavy boundary.
B22t—20 to 31 inches, strong brown (7.5YR 5/6) gravelly clay loam; moderate medium and coarse subangular blocky structure; friable, slightly sticky, slightly plastic; continuous moderately thick clay films on ped faces and in pores; 30 percent coarse fragments; strongly acid; clear wavy boundary.
B23t—31 to 42 inches, yellowish red (5YR 4/6) gravelly sandy clay loam; weak medium and fine subangular blocky structure; friable, slightly sticky, slightly plastic; many moderately thick clay films on ped faces and in pores; 30 percent coarse fragments; strongly acid; gradual wavy boundary.
B24t—42 to 60 inches, brown (7.5YR 5/4) gravelly sandy clay loam; weak fine and medium subangular blocky structure; friable, nonsticky, nonplastic; common thin clay films on ped faces; 30 percent coarse fragments; strongly acid.

The solum thickness is 60 inches or more. The depth to bedrock is more than 6 feet. Coarse fragments make up 15 to 30 percent of the upper part of the solum and 20 to 30 percent of the lower part. Unless limed, the soil is strongly acid and very strongly acid throughout.

The A1 horizon has hue of 10YR, value of 2 and 3, and chroma of 1 and 2. The A2 horizon has hue of 10YR, value of 5 and 6, and chroma of 3 through 6. The fine-earth texture is dominantly silt loam but is loam or sandy loam in some areas.

The B horizon has hue of 5YR through 10YR, value of 4 and 5, and chroma of 4 through 6. The fine-earth textures are light silty clay loam, clay loam, and sandy clay loam.

Opequon series

Soils of the Opequon series are clayey, mixed, mesic Lithic Hapludalfs. The soils are shallow and well drained and are on ridges and side slopes of limestone valleys. The soils formed in residuum weathered from limestone. Slopes range from 5 to 50 percent.

Opequon soils are associated on the landscape with Edom, Hagerstown, Murrill, and Hublersburg soils, which are deep.

Typical pedon of Opequon silty clay loam, 5 to 15 percent slopes, in a pasture, 2 miles north of Culp on Route 07496, 500 feet west of road:

Ap—0 to 8 inches, dark brown (7.5YR 3/2) silty clay loam; moderate medium and fine granular structure; friable, slightly sticky, slightly plastic; 10 percent coarse fragments; neutral; abrupt smooth boundary.

B2t—8 to 16 inches, yellowish red (5YR 4/6) silty clay; moderate medium and fine subangular blocky structure; friable, sticky, plastic; continuous thick clay films on ped faces and in pores; 10 percent coarse fragments; neutral; clear wavy boundary.

R—16 inches, grayish brown (2.5Y 5/2) fractured thin-bedded limestone.

The solum thickness and depth to bedrock range from 12 to 20 inches. The coarse fragment content ranges from 5 to 35 percent. In unlimed areas the soil is slightly acid and neutral throughout.

The Ap horizon has hue of 7.5YR and 5YR, value of 3 and 4, and chroma of 2 and 3. It is dominantly silty clay loam but is silt loam in some areas.

The B horizon has hue of 7.5YR and 5YR, value of 4 and 5, and chroma of 6 and 8. The fine-earth textures are silty clay loam, silty clay, and clay.

Purdy series

Soils of the Purdy series are clayey, mixed, mesic Typic Ochraquults. The soils are deep and poorly drained and are on stream terraces throughout the county. The soils formed in old alluvium derived from upland soils underlain by shale and sandstone. Slopes range from 0 to 3 percent.

Purdy soils are associated on the landscape with Brinkerton, Monongahela, and Tyler soils. Purdy soils do not have the fragipan characteristic of the Brinkerton, Monongahela, and Tyler soils.

Typical pedon of Purdy silt loam, in a wooded area, 3/4 mile southwest of Bald Eagle on U.S. Route 220, 300 feet southeast of road:

O2—1 inch to 0, very dark gray (5YR 3/1) partially decomposed organic matter.

A1—0 to 3 inches, black (N 2/0) silt loam; weak medium granular structure; friable, nonsticky, nonplastic; medium acid; abrupt smooth boundary.

B1g—3 to 9 inches, grayish brown (10YR 5/2) silty clay loam; few fine distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable, nonsticky, slightly plastic; 5 percent coarse fragments; medium acid; clear smooth boundary.

B21tg—9 to 12 inches, gray (10YR 5/1) heavy silty clay loam; common fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable, nonsticky, slightly plastic; few thin clay films on ped faces and in pores; 5 percent coarse fragments; strongly acid; clear smooth boundary.

B22tg—12 to 21 inches, gray (10YR 5/1) silty clay; many medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable, slightly sticky, plastic; many moderately thick clay films on ped faces and in pores; 10 percent coarse fragments; strongly acid; clear wavy boundary.

B23tg—21 to 34 inches, grayish brown (2.5Y 5/2) silty clay; common coarse prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm, sticky, plastic; common thin clay films on ped faces and in pores; 10 percent coarse fragments; very strongly acid; gradual wavy boundary.

Cg—34 to 60 inches, gray (5Y 6/1) cobbly silty clay; many coarse prominent dark yellowish brown (10YR 4/4) mottles; massive; firm, sticky, plastic; 40 percent coarse fragments; very strongly acid.

The solum thickness ranges from 32 to 47 inches. The depth to bedrock or unconforming layer is more than 4 feet. Coarse fragments make up 0 to 10 percent of the solum and 0 to 40 percent of the C horizon. The depth to mottles is less than 8 inches. Unless limed, the soil is very strongly acid and strongly acid throughout.

The A horizon has hue of 10YR or is neutral and has value of 2 through 5 and chroma of 0 through 2. It is dominantly silt loam but is silty clay loam in some areas.

The B horizon has hue of 10YR through 5Y, value of 4 and 5, and chroma of 1 and 2. Mottles have hue of 10YR and 7.5YR, value of 4 and 5, and chroma of 6 through 8. The horizon ranges from silty clay loam to clay; it is more than 35 percent clay in the particle-size control section.

The C horizon has hue of 10YR through 5Y or is neutral and has value of 5 and 6 and chroma of 0 through 3. The fine-earth textures are clay, silty clay, and clay loam.

Tyler series

Soils of the Tyler series are fine-silty, mixed, mesic Aeric Fragiaquults. The soils are deep and somewhat poorly drained and are on stream terraces throughout the county. The soils formed in old alluvium washed from upland soils underlain by shale and sandstone. Slopes range from 0 to 3 percent.

Tyler soils are associated on the landscape with Monongahela and Purdy soils on terraces and Barbour, Basher, and Holly soils on flood plains. The Monongahela soils are moderately well drained, and the Purdy and Holly soils are poorly drained. The Tyler soils have a fragipan that is not characteristic of the Barbour or Basher soils.

Typical pedon of Tyler silt loam in a field at North 3rd Street and Logan Avenue, in Bellwood:

Ap—0 to 7 inches, dark gray (10YR 4/1) silt loam, weak fine granular structure; friable, nonsticky, nonplastic; slightly acid; abrupt smooth boundary.

B1t—7 to 14 inches, yellowish brown (10YR 5/4) light silty clay loam; common medium faint yellowish brown (10YR 5/6) mottles and few fine faint light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few thin clay films in pores; strongly acid; clear wavy boundary.

B2t—14 to 20 inches, gray (10YR 6/1) light silty clay loam; many medium faint yellowish brown (10YR 5/6 and 5/4) mottles; moderate medium subangular blocky structure; friable, slightly sticky, plastic; continuous moderately thick clay films on ped faces and in pores; very strongly acid; clear wavy boundary.

Bx1—20 to 28 inches, yellowish brown (10YR 5/4) light silty clay loam; many medium faint grayish brown (10YR 5/2) and yellowish brown (10YR 5/6) mottles; very coarse prismatic structure parting to weak thin platy; light gray (10YR 6/1) prism faces; very firm, brittle, slightly sticky, plastic; continuous moderately thick clay films on secondary ped faces and in pores; very strongly acid; gradual wavy boundary.

Bx2—28 to 48 inches, yellowish brown (10YR 5/6) light clay loam; many medium faint dark grayish brown (10YR 4/2) mottles; very coarse prismatic structure parting to weak thin platy; light gray (10YR 6/1) ped faces; very firm, brittle, slightly sticky, platic; continuous thin clay films on faces of plates and in pores; very strongly acid; gradual wavy boundary.

C—48 to 62 inches, yellowish brown (10YR 5/8) silty clay loam; many coarse faint light yellowish brown (10YR 6/4) mottles; massive; firm; nonsticky, slightly plastic; strongly acid.

The solum thickness ranges from 40 to 60 inches. The depth to bedrock is more than 5 feet, and the depth to the fragipan ranges from 20 to 24 inches. Mottles with chroma of 2 or less are at a depth of 5 to 9 inches. Unless limed, the soil is very strongly acid and strongly acid throughout.

The Ap horizon has hue of 10YR and 2.5Y, value of 4 through 6, and chroma of 1 through 3. It is dominantly silt loam, but is silty clay loam in some areas.

The B1t horizon has hue of 10YR and 2.5Y, value of 5 and 6, chroma of 3 through 6 and is mottled. The B2t horizon has hue of 10YR and 2.5Y, value of 5 and 6, and chroma of 1 and 2 in ped interiors and on ped faces, and it is mottled. Mottles have hue of 5YR through 5Y, value of 5 or 6, and chroma of 2 through 8. The horizon is heavy silt loam or light silty clay loam.

The Bx horizon has hue of 10YR through 5Y, value of 5 and 6, and chroma of 3 through 8 and is mottled. It is light clay loam and silty clay loam.

The C horizon has hue of 5Y through 10YR, value of 4 and 5, and chroma of 3 through 8 and is mottled. It is silt loam and silty clay loam.

Udifluvents

Udifluvents are deep, somewhat poorly drained to well drained soils. They formed in alluvium of recent origin and have some stratification. The soils are on flood plains and have slopes of 0 to 3 percent.

Udifluvents are associated on the landscape with Holly, Lobdell, Laidig, Leck Kill, and Opequon soils. Udifluvents do not have the distinct horizons typical of these soils.

Because of the variability of Udifluvents, a typical pedon is not described. The solum thickness ranges from 2 to 10 inches. The depth to bedrock is more than 5 feet. Coarse fragments make up 0 to 30 percent of the surface layer and 0 to 65 percent of the substratum. The reaction ranges from very strongly acid to neutral.

The surface layer has hue of 5YR through 10YR, value of 3 through 7, and chroma of 1 through 6. The fine-earth textures are loam, silt loam, and fine sandy loam. The substratum has hue of 2.5YR through 10YR, value of 3 through 6, and chroma of 3 through 8. The fine-earth textures range from loam to sand.

Udorthents

Udorthents consist of deep, moderately well drained to excessively drained soils that do not have distinct horizon development. The soils are a heterogenous mixture of coarse fragments and soil material that has been stockpiled or disturbed. The soils are near strip mines dominantly on the Allegheny Plateau. Slopes range from 3 to 80 percent.

Udorthents are associated on the landscape with Clymer, Hazleton, Gilpin, Wharton, Laidig, and Cavode soils. Udorthents do not have the distinct horizon development of these soils.

Because of the variability of Udorthents, a typical pedon is not described. The depth of the material ranges from 30 to 60 inches or more over bedrock or original soil material. The content of coarse fragments ranges from 40 to 80 percent. The reaction in unlimed areas is strongly acid to extremely acid throughout. The fine-earth fraction has hue of 7.5YR through 2.5Y, value of 4 through 6, and chroma of 2 through 8. The fine-earth textures range from loam to silty clay loam.

Vanderlip series

Soils of the Vanderlip series are mesic, coated Typic Quartzipsamments. The soils are deep and well drained and are on side slopes and ridgetops of uplands. The soils formed in residuum derived from calcareous sandstone. Slopes range from 3 to 25 percent.

Vanderlip soils are associated on the landscape with Mertz, Hublersburg, Edom, Berks, and Morrison soils. All of these associated soils are finer textured than the Vanderlip soils.

Typical pedon Vanderlip loamy sand, 3 to 25 percent slopes, 2 miles southwest of Frankstown on Route 07022, southwest corner of sand bank:

A1—0 to 2 inches, very dark gray (10YR 3/1) loamy sand; weak fine granular structure; very friable, nonsticky, nonplastic; 3 percent coarse fragments; strongly acid; abrupt wavy boundary.
A2—2 to 17 inches, dark yellowish brown (10YR 4/4) loamy sand; massive; very friable, nonsticky, nonplastic; strongly acid; clear wavy boundary.
B21—17 to 28 inches, yellowish brown (10YR 5/6) loamy sand; single grain; loose, nonsticky, nonplastic; strongly acid; gradual wavy boundary.
B22—28 to 60 inches, brownish yellow (10YR 6/6) sand; few horizontal dark yellowish brown (10YR 4/4) loamy sand lamellae 1 to 3 inches thick and totaling about 5 inches thick; single grain; loose, nonsticky, nonplastic; common clay bridging in lamellae; 5 percent coarse fragments; very strongly acid.

The solum thickness ranges from 40 to 65 inches. The depth to bedrock is more than 8 feet. Coarse fragments make up 0 to 20 percent of the solum and up to 45 percent of the C horizon. Reaction throughout the soil is very strongly acid and strongly acid in unlimed areas.

The A1 horizon has hue of 7.5YR and 10YR, value of 2 through 5, and chroma of 0 through 3. The A2 horizon has hue of 7.5YR and 10YR, value of 4 through 6, and chroma of 2 through 6. The A horizon is dominantly loamy sand but is sand in some areas.

The B horizon has hue of 7.5YR and 10YR, value of 5 and 6, and chroma of 4 through 6. The fine-earth texture is loamy sand or sand.

Weikert series

Soils of the Weikert series are loamy-skeletal, mixed, mesic Lithic Dystrochrepts. The soils are shallow and well drained and are on highly dissected upland ridges. The soils formed in residuum from weathered acid shale. Slopes range from 3 to 70 percent.

Weikert soils are associated on the landscape with Berks, Bedington, Gilpin, Ernest, Edom, Brinkerton, Cavode, and Wharton soils. All of these associated soils are more than 20 inches deep to bedrock.

Typical pedon of Weikert channery silt loam, 3 to 8 percent slopes, in a pasture, 1-1/2 miles west of Geesytown on Route 07016, in a road cut on the north side of road:

Ap—0 to 6 inches, dark brown (10YR 4/3) channery silt loam; weak fine granular structure; very friable, nonsticky, nonplastic; 25 percent coarse fragments; slightly acid; abrupt smooth boundary.
B2—6 to 10 inches, yellowish brown (10YR 5/4) shaly silt loam; weak fine granular and subangular blocky structure; very friable, slightly sticky, nonplastic; 30 percent coarse fragments; strongly acid; clear wavy boundary.
C—10 to 14 inches, yellowish brown (10YR 5/4) very shaly silt loam; massive; friable, nonsticky, nonplastic; 85 percent coarse fragments; strongly acid; clear wavy boundary.
R—14 inches, olive gray (5Y 4/2) shale.

The solum thickness ranges from 10 to 20 inches. The depth to bedrock ranges from 12 to 20 inches. Coarse fragments make up 20 to 30 percent of the Ap horizon, 30 to 45 percent of the B horizon, and 60 to 85 percent of the C horizon. The coarse fragment content averages more than 35 percent in the particle-size control section. Unless limed, the soil is very strongly acid and strongly acid throughout.

The Ap horizon has hue of 10YR, value of 3 through 5, and chroma of 2 or 3. The fine-earth texture is dominantly silt loam but is loam in some areas.

The B and C horizons have hue of 10YR and 7.5YR, value of 4 and 5, and chroma of 4 through 6. The fine-earth textures are silt loam and loam.

Wharton series

Soils of the Wharton series are fine-loamy, mixed, mesic Aquic Hapludults. The soils are deep and moderately well drained and are on concave side slopes of ridges on the Allegheny Plateau. The soils formed in residuum weathered from acid clay shale. Slopes range from 3 to 15 percent.

Wharton soils are associated with the Gilpin, Cavode, Ernest, and Brinkerton soils. The Gilpin soils are moderately deep and well drained, and the Cavode soils are somewhat poorly drained. Wharton soils do not have the fragipan that is characteristic of the Ernest and Brinkerton soils.

Typical pedon of Wharton silt loam, 3 to 8 percent slopes, 1/2 mile north of Tunnel Hill on Route 07068, 200 feet east of road:

Ap—0 to 8 inches, dark grayish brown (10YR 4/2) silt loam; weak medium granular structure; friable, nonsticky, nonplastic; 10 percent coarse fragments; very strongly acid; abrupt smooth boundary.
B1—8 to 12 inches, yellowish brown (10YR 5/6) light silty clay loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; few

very thin clay films on ped faces; 10 percent coarse fragments; strongly acid; clear wavy boundary.

B21t—12 to 21 inches, yellowish brown (10YR 5/8) silty clay loam; few fine faint strong brown (7.5YR 5/8) mottles; moderate fine subangular blocky structure; friable, slightly sticky, plastic; common moderately thick clay films on ped faces and in pores; 10 percent coarse fragments; strongly acid; abrupt wavy boundary.

B22t—21 to 41 inches, yellowish brown (10YR 5/4) silty clay loam; many coarse distinct light brownish gray (2.5Y 6/2) mottles and common medium distinct strong brown (7.5YR 5/8) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; friable, sticky, plastic; many moderately thick clay films on ped faces and in pores; 10 percent coarse fragments; very strongly acid; clear wavy boundary.

C—41 to 78 inches, variegated yellowish brown (10YR 5/4) and strong brown (7.5YR 5/6) very shaly heavy silt loam; massive; firm, nonsticky, nonplastic; 55 percent coarse fragments; strongly acid; gradual wavy boundary.

R—78 inches, black (N 2/0) acid shale bedrock.

The solum thickness ranges from 36 to 60 inches. The depth to bedrock is more than 4 feet. The depth to mottles with chroma of 2 or less ranges from 15 to 30 inches. Coarse fragments make up 5 to 15 percent of the A and B horizons and 20 to 75 percent of the C horizon. The soil is very strongly acid and strongly acid throughout.

The Ap horizon has hue of 10YR, value of 4 and 5, and chroma of 2 and 3. It is dominantly silt loam but is silty clay loam in some areas.

The B1 horizon has hue of 10YR, value of 5, and chroma of 4 through 8. It is silt loam and light silty clay loam. The B21t horizon has hue of 7.5YR and 10YR, value of 4 and 5, and chroma of 4 through 8 and is mottled. The B22t horizon has hue of 10YR and 2.5Y, value of 5 and 6, and chroma of 2 through 4 and is mottled. Mottles have hue of 7.5YR through 2.5Y, value of 5 through 7, and chroma of 1 through 8. Some subhorizons are clay loam to silt loam and silty clay. The B horizon is less than 35 percent clay in the particle-size control section.

The C horizon has hue of 10YR and 7.5YR, value of 5, and chroma of 4 through 6. The fine-earth textures are clay loam to heavy silt loam.

Wharton Variant

Soils of the Wharton Variant are fine, mixed, mesic Aquic Fragiudalfs. The soils are deep and somewhat poorly drained and are on mountain foot slopes bordering limestone valleys. The soils formed in colluvium weathered from sandstone, shale, and limestone. Slopes range from 3 to 8 percent.

Wharton Variant soils are associated on the landscape with Edom, Opequon, Weikert, and Buchanan soils. The Edom, Opequon, and Weikert soils are well drained. The Wharton Variant soils have more clay in the subsoil than do the Buchanan soils.

Typical pedon of Wharton Variant silt loam, 3 to 8 percent slopes, in a cultivated field, 450 yards south of Route 07021 on Pennsylvania Game Commission Land road, and 50 yards west of road:

Ap—0 to 7 inches, dark brown (10YR 4/3) silt loam; weak fine granular structure; friable, nonsticky, slightly plastic; neutral; abrupt smooth boundary.

B21t—7 to 12 inches, yellowish brown (10YR 5/6) silty clay loam; moderate coarse subangular blocky structure; friable, slightly sticky, plastic; thin continuous clay films on ped faces and in pores; neutral; clear wavy boundary.

B22t—12 to 16 inches, light yellowish brown (10YR 6/4) silty clay loam; few fine distinct strong brown (7.5YR 5/6) mottles and few fine faint light brownish gray (10YR 6/2) mottles; moderate fine and medium subangular blocky structure; friable, sticky, plastic; thin continuous clay films on ped faces and in pores; slightly acid; clear wavy boundary.

B23t—16 to 24 inches, pale brown (10YR 6/3) silty clay loam; few fine distinct strong brown (7.5YR 5/6) mottles and many medium faint light brownish gray (10YR 6/2) mottles; moderate fine and medium subangular blocky structure; friable, sticky, plastic; continuous moderately thick clay films on ped faces and in pores; 10 percent coarse fragments; medium acid; clear wavy boundary.

IIBx1—24 to 34 inches, brown (7.5YR 5/4) silty clay loam; few fine distinct light brownish gray (10YR 6/2) mottles and few fine faint strong brown (7.5YR 5/6) mottles; weak very coarse prismatic structure parting to weak thin platy; very firm, brittle, sticky, plastic; continuous thick clay films and few fine black coatings on secondary peds; 10 percent coarse fragments; neutral; clear wavy boundary.

IIBx2—34 to 54 inches, yellowish brown (10YR 5/6) silty clay loam; few fine faint light brownish gray (10YR 6/2) mottles and few fine distinct strong brown (7.5YR 5/6) mottles; weak very coarse prismatic structure; very firm, brittle, sticky, plastic; few medium thick clay films in pores; 10 percent coarse fragments; neutral; clear irregular boundary.

IIC—54 to 63 inches, brown (7.5YR 5/4) channery clay loam; massive; firm, slightly sticky, slightly plastic; 15 percent coarse fragments; neutral.

The solum thickness ranges from 38 to 60 inches. The depth to bedrock is 4 feet or more and the depth to the fragipan is 15 to 32 inches. Mottles with chroma of 2 or less are at a depth of 10 to 16 inches. Coarse fragments make up 0 to 10 percent of the Ap and B2t horizons, 5 to 30 percent of the IIBx horizon, and 15 to 45 percent

of the IIC horizon. The soil ranges from strongly acid to neutral in the upper part of the solum and from neutral to mildly alkaline in the lower part and in the C horizon.

The Ap horizon has hue of 10YR and 2.5Y, value of 4 and 5, and chroma of 2 and 3. It is dominantly silt loam but is silty clay loam in some areas.

The B2t horizon has hue of 7.5YR through 2.5Y, value of 4 through 7, and chroma of 3 through 7. Mottles have hue of 5YR through 5Y, value of 3 through 7, and chroma of 1 through 6. The horizon is clay loam to silty clay; it is more than 35 percent clay in the particle-size control section.

The IIBx horizon has hue of 5YR through 5Y, value of 4 through 6, and chroma of 4 through 8. Mottles have hue of 5YR through 5Y, value of 5 through 7, and chroma of 2 through 6. The fine-earth textures are silty clay loam, silty clay, and clay loam.

The IIC horizon has hue of 7.5YR and 10YR, value of 4 through 6, and chroma of 1 through 4. The fine-earth textures are silty clay loam and clay loam.

formation of the soils

This section describes the factors of soil formation, relates these factors to the formation of soils in the survey area, and explains the processes of soil formation.

factors of soil formation

The types of soils in an area depend on the nature of the parent material, the kind of climate, the relief, or lay of the land, the plant and animal life in and on the soil, and the length of time these factors have affected soil development.

In a small area, such as Blair County, where vegetation, time, and climate vary only slightly, the nature of the parent material produces more differences in texture and mineral content than do most of the other soil-forming factors. Climate influences the nature and extent of the weathering processes. Relief affects drainage, aeration, runoff, erosion, and exposure to sun and wind. Plant and animal life influences soil characteristics by the physical and chemical removals and additions. Finally, time is required for the other soil-forming factors to exert their influence.

The factors of soil formation are described in the following pages.

parent material

Parent material is the unconsolidated mass from which soils form. The soils of Blair County formed in parent material weathered from highly folded sedimentary rocks of sandstone, shale, and limestone.

Most soils in the county formed in place in residuum directly over the original bedrock. For example, Hublersburg and Opequon soils formed in materials weathered from limestone; Hazleton and Clymer soils in materials weathered from sandstone; and Berks, Bedington, and Leck Kill soils in materials weathered from shale.

Some soils formed in colluvium or other materials that moved to a lower position on the landscape. The Clarksburg soils formed in colluvial materials influenced by limestone; the Laidig, Murrill, Buchanan, Ernest, and Brinkerton soils formed in colluvial materials derived from sandstone, shale, and some siltstone.

Some soils formed in alluvium, or stream-deposited materials. These deposits range from very old to those of recent origin. Monongahela, Tyler, and Purdy soils on terraces formed in old deposits; Holly, Basher, and Linden soils formed in recent deposits.

relief

The relief of the county is dominated by steep slopes and narrow to moderately wide valley floors. The relief is influenced, to a large extent, by strongly folded, sloping bedrock subjected to erosion and other water-influenced geologic processes.

The highest ridges in the county, on which soils such as Hazleton, Lehew, and Leetonia soils formed, are over sandstone that is highly resistant to weathering. On the other hand, soils in the moderately wide valleys with undulating slopes, such as Hublersburg and Opequon soils, are over limestone bedrock that is readily weathered.

Shale is intermediate in resistance to weathering. Concentrations of runoff over the readily eroded Berks and Weikert soils and the shale bedrock create the dissected hills typical of the shale areas of the county.

The accumulation of soil material at the base of steep slopes through washing, creeping, slippage, and gravity is typical of the foot slopes on which soils such as the moderately steep to gently sloping Buchanan, Laidig, Ernest, and Brinkerton soils formed. New and old water-deposited material adjacent to or near streams created the nearly level flood plains on which the Basher and Linden soils formed and the terraces on which the Tyler and Purdy soils formed.

plant and animal life

All living organisms affect soil formation. These include vegetation, animals, bacteria and other micro-organisms, and fungi. The vegetation strikingly affects the organic matter content, color, and amount of plant nutrients in the soil, especially in the surface layer. Earthworms and other burrowing animals help mix partially decomposed organic matter with mineral soil material. This mixing process increases porosity, which in turn improves water and air movement in the soil. The mixing of organic matter with mineral soil material, in combination with increased porosity, also improves the environmental conditions needed by certain micro-organisms to further digest these organic materials. Nutrients needed for plant growth are released during this digestive process.

Most of the soils in Blair County developed under forest stands, mainly species of oak, chestnut, maple,

and hickory. The soil surface in these areas had a covering of leaf litter. The upper part of the surface layer was dark colored, and the lower part was light colored, similar to the characteristic of the Hazleton and Laidig soils. The organic matter and plant nutrients were concentrated in the top 4 inches of the soil. When the land was cleared and farmed, the organic matter and plant nutrients were mixed to the depth of plowing.

climate

The climate of this county is the humid-temperate, continental type characteristic of the Middle Atlantic States. Some characteristics of the soils indicate that this kind of climate prevailed when the soils were forming and that it influenced soil development. For example, many of the soils are acid and strongly leached.

The effect of climate on the formation of soils has been nearly uniform throughout the county. The development of some soils, however, may have been influenced by a microclimate caused by differences in relief.

time

The length of time the factors of soil formation have acted on the weathered mineral material is indicated to some extent by the degree of development in the soil profile. Some soils, especially those formed in alluvium, show very little development because the soil material has not been in place long enough for the formation of distinct layers. Other soils vary in the degree to which formation has progressed, ranging from those that have minimal development to those that are well developed.

The Holly, Lobdell, and Linden soils, for example, formed in alluvium and have little profile development. Development of these soils is impeded because new material is constantly being deposited on the surface with each inundation by floodwater. These soils are called young soils, or soils of recent origin.

The development of the Weikert, Berks, and Hazleton soils has advanced sufficiently so that some changes have taken place in the parent material. These changes, however, do not represent the effects of advanced weathering. Weathering and development of these soils have been slowed by the effects of relief and by the kind of parent material.

The Bedington, Laidig, Edom, and Hublersburg soils are well developed. The parent material of these soils has been in place for a period of time long enough so that distinct layers have had time to develop.

processes of soil horizon differentiation

The soil profile extends from the surface downward to materials that are little altered by the soil-forming processes. Most soil profiles contain three major horizons, called A, B, and C horizons. These major horizons may be further subdivided by the use of numbers and letters to indicate changes within a horizon. An example would be the B2t horizon, which represents a layer within the B horizon that contains translocated clay illuviated from the A horizon.

The A horizon is the surface layer. It may be subdivided into an A1 horizon, which has the largest accumulation of organic matter, and an A2 horizon, which has maximum leaching, or eluviation of clay and iron. The A2 horizon of most soils of Blair County shows brownish colors resulting from oxidation of iron.

The B horizon is underneath the A horizon and is commonly called the subsoil. In most soils of the area the B horizon is the horizon of maximum accumulation, or illuviation, of clay, iron, aluminum, or other compounds leached from the A horizon. In some soils the B horizon is a product of alteration of the parent material in place rather than from illuviation. The alteration may be caused by oxidation and reduction or by mineral weathering. The B horizon has blocky or prismatic structure and generally is firmer and lighter colored than the A1 horizon and darker colored than the C horizon.

The C horizon underlies the A or B horizon. It consists of material that may have been modified by weathering but that is relatively unaffected by the biolgical, physical, and chemical changes involved in A and B horizon formations.

Several processes involved in the formation of soils in Blair County tend to cause layers or horizons to develop in the soil profile. These include the accumulation of organic matter, chemicals, and minerals; the leaching of soluble salts; the reduction and translocation of iron; the formation of soil structure; and some translocation and loss of clay minerals, aluminum, silica, and iron. These processes proceed at different rates, depending on soil properties and environment.

As plants grow, soils gain material when leaves and plant remains accumulate on the surface. This accumulation is easily seen in areas of Leetonia and Hazleton soils and other soils that formed under forest and have not been plowed. Additions of organic matter, chemicals, and mineral material are also brought in from adjacent areas by animals, floodwaters, and wind, or they are transferred as a result of gravity.

Losses of minerals, organic matter, and chemicals occur by several means. Some losses occur when minerals decompose and part of the products of weathering are leached from the soil. This process is apparent in the Hublersburg and Hagerstown soils, from which calcium carbonate has been lost. Losses also occur when plant nutrients are removed in harvested plants. In addition, fine particles of soil material are removed by erosion, and gasses escape as organic matter decomposes.

The transfer, or translocation, of material from one part of the soil to another is common in most soils. Organic matter is moved from the upper part of the profile to the lower part in suspension or solution.

Calcium is leached from the surface layer and is held by the clay in the subsoil. In some soils, of which Bedington and Laidig soils are examples, the clay has accumulated in the B horizon as a result of transfer from a higher area in the profile.

Bases and plant nutrients move upward when they are absorbed by the roots of plants and rise in the stem to be stored in the leaves and twigs. When the plant dies and decays, the plant nutrients are returned to the soil.

Transformations occur as chemical weathering takes place. During the process of chemical weathering, iron, aluminum, calcium, and other elements are released from the primary and secondary minerals in the soil. The gray and white colors of the parent material of a well drained Hublersburg or Opequon soil, for example, gradually are replaced by the red, brown, and yellow colors of oxidized iron compounds as the parent material weathers. These changed colors indicate in this case that iron has been released or that ferrous oxide has been oxidized to ferric oxide in the presence of an adequate supply of oxygen and the lack of a water table. On the other hand, in soils which have a water table, the amount of oxygen is reduced and there is reduction of the iron. In the moderately well drained and somewhat poorly drained soils, such as Buchanan and Basher soils, the brownish or reddish subsoil mottled with gray indicates that some reduction of the iron has taken place because of a fluctuating water table. Poorly drained soils, such as Holly and Brinkerton soils, have a grayish B horizon indicative of iron reduction caused by a more permanent water table.

Many of the moderately well drained, somewhat poorly drained, and poorly drained soils have developed a subsurface horizon called a fragipan that is very firm and brittle when moist and very hard when dry. This horizon has a closely packed soil matrix, has high bulk density, is low in pore space, and, in many places, has large polyhedrons separated by gray material. The process by which this horizon is formed is not fully understood, but it is believed that a shrink-swell process packs the soil particles and creates the gross polygonal pattern of cracks in the fragipan. Clay bridges and cementation by silica and aluminum oxides are thought to be involved as bonding agents between the soil particles. Ernest, Brinkerton, and Albrights soils are examples of soils in the county that have a fragipan.

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glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 40-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 2.4
Low	2.4 to 3.2
Moderate	3.2 to 5.2
High	more than 5.2

Base saturation. The degree to which material having cation exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation exchange capacity.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a fragment.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15.2 to 38.1 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.
Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.
Soft.—When dry, breaks into powder or individual grains under very slight pressure.
Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:
Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.
Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.
Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.
Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.
Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.
Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.
Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.
Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.
Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Fragile (in tables). A soil that is easily damaged by use or disturbance.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Large stones (in tables). Rock fragments 3 inches (7.5 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Open space. A relatively undeveloped green or wooded area provided mainly within an urban area to minimize feelings of congested living.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.20 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Ponding. Standing water on soils in closed depressions. The water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rippable. Bedrock or hardpan can be excavated using a single-tooth ripping attachment mounted on a tractor with a 200-300 draw bar horsepower rating.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-size particles.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to insure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.5 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 mm in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows:

	Millimeters
Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay*

loam, sandy clay, silty clay, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Recorded in the period 1951-75 at Martinsburg, Pa.]

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average daily	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days[1]	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January	35.0	20.3	27.7	63	-4	12	2.26	1.36	3.06	6	7.3
February	36.7	21.2	28.9	64	-3	7	2.36	1.29	3.23	6	9.9
March	45.3	28.4	36.9	75	9	82	3.39	2.07	4.56	8	9.0
April	59.5	39.2	49.4	86	22	294	3.42	1.94	4.62	8	.7
May	69.5	48.1	58.8	88	30	583	3.31	1.71	4.61	9	.0
June	78.1	56.7	67.4	94	40	822	3.82	1.72	5.52	7	.0
July	82.1	60.7	71.4	95	46	973	3.54	1.92	4.87	7	.0
August	80.5	59.4	70.0	93	45	930	3.03	1.44	4.31	6	.0
September	73.7	52.5	63.1	92	33	693	3.09	1.74	4.18	6	.0
October	62.9	42.4	52.6	84	23	396	2.38	.95	3.54	4	.1
November	49.3	33.5	41.4	74	13	115	2.95	1.66	4.00	6	2.7
December	37.9	24.4	31.2	66	3	45	2.69	1.23	3.87	7	6.3
Year	59.2	40.6	49.9	96	-7	4,952	36.24	30.15	42.06	80	36.0

[1] A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40° F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Recorded in the period 1951-75 at Martinsburg, Pa.]

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	April 14	April 29	May 14
2 years in 10 later than--	April 10	April 24	May 8
5 years in 10 later than--	April 3	April 14	April 26
First freezing temperature in fall:			
1 year in 10 earlier than--	October 24	October 8	September 24
2 years in 10 earlier than--	October 30	October 14	September 30
5 years in 10 earlier than--	November 9	October 26	October 13

TABLE 3.--GROWING SEASON

[Recorded in the period 1951-75 at Martinsburg, Pa.]

Probability	Daily minimum temperature during growing season		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	198	168	139
8 years in 10	205	177	149
5 years in 10	220	194	169
2 years in 10	235	212	189
1 year in 10	242	220	199

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AbB	Albrights gravelly silt loam, 3 to 8 percent slopes	963	0.3
AbC	Albrights gravelly silt loam, 8 to 15 percent slopes	485	0.1
AcB	Albrights very stony silt loam, 3 to 8 percent slopes	787	0.2
AcD	Albrights very stony silt loam, 8 to 25 percent slopes	1,588	0.5
AnB	Andover Variant loam, 3 to 8 percent slopes	600	0.2
AoB	Andover Variant extremely stony loam, 3 to 8 percent slopes	1,158	0.3
Ba	Basher soils	3,422	1.0
BeB	Bedington channery silt loam, 3 to 8 percent slopes	714	0.2
BeC	Bedington channery silt loam, 8 to 15 percent slopes	1,376	0.4
BdD	Bedington very stony silt loam, 8 to 25 percent slopes	1,150	0.3
BkB	Berks channery silt loam, 3 to 8 percent slopes	1,469	0.4
BkC	Berks channery silt loam, 8 to 15 percent slopes	4,335	1.3
BkD	Berks channery silt loam, 15 to 25 percent slopes	9,182	2.7
BmC	Berks-Weikert channery silt loams, 8 to 15 percent slopes	916	0.3
BmD	Berks-Weikert channery silt loams, 15 to 25 percent slopes	1,126	0.3
BmF	Berks-Weikert channery silt loams, 25 to 70 percent slopes	18,241	5.4
BoB	Blairton silt loam, 3 to 8 percent slopes	736	0.2
BoC	Blairton silt loam, 8 to 15 percent slopes	827	0.2
BrB	Brinkerton silt loam, 3 to 8 percent slopes	5,801	1.7
BrC	Brinkerton silt loam, 8 to 15 percent slopes	680	0.2
BuB	Buchanan gravelly silt loam, 3 to 8 percent slopes	1,969	0.6
BuC	Buchanan gravelly silt loam, 8 to 15 percent slopes	1,387	0.4
BxB	Buchanan extremely stony silt loam, 3 to 8 percent slopes	4,361	1.3
BxD	Buchanan extremely stony silt loam, 8 to 25 percent slopes	8,696	2.6
CaB	Cavode silt loam, 3 to 8 percent slopes	567	0.2
CbB	Clarksburg silt loam, 3 to 8 percent slopes	3,687	1.1
CbC	Clarksburg silt loam, 8 to 15 percent slopes	820	0.2
CvB	Clymer loam, 3 to 8 percent slopes	1,029	0.3
CyB	Clymer very stony loam, 3 to 8 percent slopes	3,356	1.0
CyD	Clymer very stony loam, 8 to 25 percent slopes	1,935	0.6
DR	Dystrochrepts-Rubble land complex	5,276	1.6
EdB	Edom silty clay loam, 3 to 8 percent slopes	1,253	0.4
EdC	Edom silty clay loam, 8 to 15 percent slopes	1,941	0.6
EdD	Edom silty clay loam, 15 to 25 percent slopes	1,220	0.4
EmB	Edom-Weikert complex, 3 to 8 percent slopes	283	0.1
EmC	Edom-Weikert complex, 8 to 15 percent slopes	714	0.2
EmD	Edom-Weikert complex, 15 to 25 percent slopes	633	0.2
ErB	Ernest silt loam, 3 to 8 percent slopes	1,438	0.4
ErC	Ernest silt loam, 8 to 15 percent slopes	2,301	0.7
GpB	Gilpin channery silt loam, 3 to 8 percent slopes	637	0.2
GpC	Gilpin channery silt loam, 8 to 15 percent slopes	583	0.2
GpD	Gilpin channery silt loam, 15 to 25 percent slopes	596	0.2
HeB	Hagerstown-Rock outcrop complex, 0 to 8 percent slopes	542	0.2
HeD	Hagerstown-Rock outcrop complex, 8 to 25 percent slopes	1,650	0.5
HgB	Hazleton channery sandy loam, 3 to 8 percent slopes	1,171	0.3
HgC	Hazleton channery sandy loam, 8 to 15 percent slopes	320	0.1
HhB	Hazleton very stony sandy loam, 3 to 8 percent slopes	4,618	1.4
HhC	Hazleton very stony sandy loam, 8 to 15 percent slopes	7,461	2.2
HhF	Hazleton very stony sandy loam, 25 to 70 percent slopes	18,243	5.4
Ho	Holly silt loam	4,130	1.2
HuB	Hublersburg cherty silt loam, 3 to 8 percent slopes	18,841	5.6
HuC	Hublersburg cherty silt loam, 8 to 15 percent slopes	4,783	1.4
HxB2	Hublersburg cherty silty clay loam, 3 to 8 percent slopes, eroded	1,452	0.4
HxC2	Hublersburg cherty silty clay loam, 8 to 15 percent slopes, eroded	3,260	1.0
HxD2	Hublersburg cherty silty clay loam, 15 to 25 percent slopes, eroded	2,109	0.6
LaB	Laidig channery loam, 3 to 8 percent slopes	1,222	0.4
LaC	Laidig channery loam, 8 to 15 percent slopes	1,572	0.5
LaD	Laidig channery loam, 15 to 25 percent slopes	576	0.2
LeB	Laidig extremely stony loam, 3 to 8 percent slopes	6,662	2.0
LeD	Laidig extremely stony loam, 8 to 25 percent slopes	18,084	5.3
LeF	Laidig extremely stony loam, 25 to 45 percent slopes	26,176	7.8
LkB	Leck Kill channery silt loam, 3 to 8 percent slopes	6,217	1.8
LkC	Leck Kill channery silt loam, 8 to 15 percent slopes	3,521	1.0
LkD	Leck Kill channery silt loam, 15 to 25 percent slopes	4,561	1.3
LLF	Leck Kill channery silt loam, very steep	8,236	2.4
LmB	Leetonia flaggy loamy sand, 3 to 8 percent slopes	2,398	0.7
LnD	Lehew very stony loam, 8 to 25 percent slopes	1,491	0.4
LnF	Lehew very stony loam, 25 to 50 percent slopes	3,650	1.1
Lo	Linden soils	1,473	0.4
Lp	Lobdell silt loam	929	0.3
MeB	Meckesville gravelly silt loam, 3 to 8 percent slopes	1,228	0.4
MeC	Meckesville gravelly silt loam, 8 to 15 percent slopes	1,670	0.5

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
MkB	Meckesville very stony silt loam, 3 to 8 percent slopes	2,557	0.4
MkD	Meckesville very stony silt loam, 8 to 25 percent slopes	14,157	4.2
MnB	Mertz channery silt loam, 3 to 8 percent slopes	1,158	0.3
MnC	Mertz channery silt loam, 8 to 15 percent slopes	772	0.2
MnD	Mertz channery silt loam, 15 to 25 percent slopes	393	0.1
MoB	Monongahela silt loam, 3 to 8 percent slopes	1,897	0.6
MrB	Morrison sandy loam, 3 to 8 percent slopes	1,814	0.5
MrC	Morrison sandy loam, 8 to 15 percent slopes	2,502	0.7
MrD	Morrison sandy loam, 15 to 25 percent slopes	1,159	0.3
MsB	Morrison very stony sandy loam, 3 to 8 percent slopes	2,321	0.7
MsD	Morrison very stony sandy loam, 8 to 25 percent slopes	5,315	1.6
MsF	Morrison very stony sandy loam, 25 to 50 percent slopes	1,555	0.5
MuB	Murrill gravelly silt loam, 3 to 8 percent slopes	3,003	0.9
MuC	Murrill gravelly silt loam, 8 to 15 percent slopes	2,260	0.7
MuD	Murrill gravelly silt loam, 15 to 25 percent slopes	429	0.1
MxB	Murrill extremely stony silt loam, 3 to 8 percent slopes	819	0.2
MxD	Murrill extremely stony silt loam, 8 to 25 percent slopes	939	0.3
OuC	Opequon silty clay loam, 5 to 15 percent slopes	3,950	1.2
OuD	Opequon silty clay loam, 15 to 25 percent slopes	1,512	0.4
OxF	Opequon-Hagerstown-Rock outcrop complex, 25 to 50 percent slopes	3,323	1.0
Pt	Pits-Dumps complex	420	0.1
Pu	Purdy silt loam	1,895	0.6
Qu	Quarries-Dumps complex	739	0.2
Ty	Tyler silt loam	936	0.3
UD	Udifluvents-Dystrochrepts complex	6,934	2.0
US	Udorthents, strip mine	1,723	0.5
Ux	Urban land	2,005	0.6
UYB	Urban land-Berks complex, 0 to 8 percent slopes	1,329	0.4
UYD	Urban land-Berks complex, 8 to 25 percent slopes	997	0.3
UZB	Urban land-Edom complex, 0 to 8 percent slopes	1,342	0.4
UZD	Urban land-Edom complex, 8 to 25 percent slopes	867	0.3
VaC	Vanderlip loamy sand, 3 to 25 percent slopes	348	0.1
VdD	Vanderlip very stony loamy sand, 3 to 25 percent slopes	315	0.1
WeB	Weikert channery silt loam, 3 to 8 percent slopes	1,216	0.4
WeC	Weikert channery silt loam, 8 to 15 percent slopes	2,009	0.6
WeD	Weikert channery silt loam, 15 to 25 percent slopes	3,079	0.9
WhB	Wharton silt loam, 3 to 8 percent slopes	615	0.2
WhC	Wharton silt loam, 8 to 15 percent slopes	225	0.1
WvB	Wharton Variant silt loam, 3 to 8 percent slopes	1,724	0.5
W	Water	163	*
	Total	339,200	100.0

* Less than 0.1 percent.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Soil name and map symbol	Corn	Corn silage	Oats	Wheat	Alfalfa hay	Grass-legume hay	Pasture
	Bu	Ton	Bu	Bu	Ton	Ton	AUM*
AbB---- Albrights	100	20	70	40	3.5	3.0	6.5
AbC---- Albrights	90	18	65	40	3.5	3.0	6.5
AcB, AcD---- Albrights	---	---	---	---	---	---	---
AnB---- Andover Variant	85	17	60	---	---	2.5	5.0
AoB---- Andover Variant	---	---	---	---	---	---	---
Ba---- Basher	120	24	80	45	4.5	3.5	8.5
BeB---- Bedington	130	26	75	50	5.0	3.5	9.5
BeC---- Bedington	120	24	70	45	4.5	3.5	8.5
BdD---- Bedington	---	---	---	---	---	---	---
BkB---- Berks	80	16	60	30	3.5	3.0	6.5
BkC---- Berks	75	15	55	35	3.0	2.5	5.5
BkD---- Berks	70	14	50	30	3.0	2.5	5.5
BmC---- Berks-Weikert	65	13	50	29	2.6	2.3	4.8
BmD---- Berks-Weikert	---	---	---	---	---	---	---
BmF---- Berks-Weikert	---	---	---	---	---	---	---
BoB---- Blairton	75	15	60	35	---	2.5	5.0
BoC---- Blairton	70	14	55	30	---	2.0	4.0
BrB---- Brinkerton	90	18	60	---	---	2.5	5.0
BrC---- Brinkerton	80	16	55	---	---	2.5	5.0
BuB---- Buchanan	100	20	65	40	3.5	3.0	6.5
BuC---- Buchanan	90	18	60	35	3.5	3.0	6.5

See footnote at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Corn silage	Oats	Wheat	Alfalfa hay	Grass-legume hay	Pasture
	Bu	Ton	Bu	Bu	Ton	Ton	AUM*
BxB, BxD---------- Buchanan	---	---	---	---	---	---	---
CaB---------- Cavode	85	17	65	35	---	3.0	5.5
CbB---------- Clarksburg	100	20	70	40	3.5	3.0	6.5
CbC---------- Clarksburg	90	18	65	40	3.5	3.0	6.5
CvB---------- Clymer	120	24	75	45	4.5	3.5	8.5
CyB, CyD---------- Clymer	---	---	---	---	---	---	---
DR---------- Dystrochrepts-Rubble land	---	---	---	---	---	---	---
EdB---------- Edom	100	20	70	40	4.0	3.0	7.5
EdC---------- Edom	90	18	65	35	3.5	3.0	6.5
EdD---------- Edom	80	16	60	35	3.0	2.5	5.5
EmB---------- Edom-Weikert	80	16	61	33	3.1	2.6	6.0
EmC---------- Edom-Weikert	75	15	56	29	2.9	2.6	5.4
EmD---------- Edom-Weikert	---	---	---	---	---	---	---
ErB---------- Ernest	100	20	65	40	3.5	3.0	6.5
ErC---------- Ernest	95	19	60	35	3.5	3.0	6.0
GpB---------- Gilpin	90	18	65	40	3.5	3.0	7.0
GpC---------- Gilpin	85	17	60	35	3.5	3.0	7.0
GpD---------- Gilpin	80	16	55	30	3.0	2.5	6.0
HeB---------- Hagerstown-Rock outcrop	---	---	---	---	---	---	---
HeD---------- Hagerstown-Rock outcrop	---	---	---	---	---	---	---
HgB---------- Hazleton	125	25	75	45	4.5	3.5	8.0
HgC---------- Hazleton	115	23	70	40	4.5	3.5	7.5
HhB---------- Hazleton	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Corn silage	Oats	Wheat	Alfalfa hay	Grass-legume hay	Pasture
	Bu	Ton	Bu	Bu	Ton	Ton	AUM*
HhC---- Hazleton	---	---	---	---	---	---	---
HhF---- Hazleton	---	---	---	---	---	---	---
Ho---- Holly	100	20	70	---	---	3.5	6.5
HuB---- Hublersburg	130	26	80	50	5.0	3.5	9.5
HuC---- Hublersburg	125	25	75	45	4.5	3.0	8.5
HxB2---- Hublersburg	125	25	75	45	4.5	3.0	8.5
HxC2---- Hublersburg	110	22	70	40	4.0	3.0	7.5
HxD2---- Hublersburg	---	---	---	---	---	---	---
LaB---- Laidig	100	20	70	40	4.0	3.0	7.7
LaC---- Laidig	95	19	65	35	4.0	3.0	7.7
LaD---- Laidig	85	17	60	30	3.5	2.5	6.7
LeB, LeD, LeF---- Laidig	---	---	---	---	---	---	---
LkB---- Leck Kill	125	25	75	50	4.5	3.0	5.0
LkC---- Leck Kill	120	24	70	50	4.0	3.0	4.5
LkD---- Leck Kill	105	21	65	45	4.0	2.5	4.0
LLF---- Leck Kill	---	---	---	---	---	---	---
LmB---- Leetonia	60	12	55	30	3.0	2.0	5.5
LnD---- Lehew	---	---	---	---	---	---	---
LnF---- Lehew	---	---	---	---	---	---	---
Lo---- Linden	120	24	80	45	4.5	3.5	8.0
Lp---- Lobdell	120	24	80	45	4.5	4.5	8.0
MeB---- Meckesville	100	20	70	40	4.0	4.0	7.5
MeC---- Meckesville	95	19	65	35	4.0	4.0	7.5

See footnote at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Corn silage	Oats	Wheat	Alfalfa hay	Grass-legume hay	Pasture
	Bu	Ton	Bu	Bu	Ton	Ton	AUM*
MkB, MkD---- Meckesville	---	---	---	---	---	---	---
MnB---- Mertz	110	22	70	40	4.5	3.5	8.5
MnC---- Mertz	105	21	65	40	4.5	3.5	8.5
MnD---- Mertz	100	20	65	40	4.0	3.0	7.5
MoB---- Monongahela	110	22	65	40	3.5	3.0	6.5
MrB---- Morrison	100	20	60	40	---	3.5	5.5
MrC---- Morrison	95	19	55	35	---	3.5	5.5
MrD---- Morrison	90	18	50	30	---	3.0	4.5
MsB, MsD---- Morrison	---	---	---	---	---	---	---
MsF---- Morrison	---	---	---	---	---	---	---
MuB---- Murrill	120	24	75	45	4.5	3.5	8.5
MuC---- Murrill	110	22	70	40	4.0	3.0	7.5
MuD---- Murrill	95	19	60	35	4.0	3.0	7.5
MxB, MxD---- Murrill	---	---	---	---	---	---	---
OuC---- Opequon	70	14	60	25	---	2.5	5.5
OuD---- Opequon	---	---	---	---	---	2.0	5.0
OxF---- Opequon-Hagerstown-Rock outcrop	---	---	---	---	---	---	---
Pt---- Pits-Dumps	---	---	---	---	---	---	---
Pu---- Purdy	80	16	55	---	---	2.5	4.0
Qu---- Quarries-Dumps	---	---	---	---	---	---	---
Ty---- Tyler	95	19	60	---	---	3.0	5.0
UD---- Udifluvents-Dystrochrepts	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Corn silage	Oats	Wheat	Alfalfa hay	Grass-legume hay	Pasture
	Bu	Ton	Bu	Bu	Ton	Ton	AUM*
US**. Udorthents							
Ux**. Urban land							
UYB---------- Urban land-Berks	---	---	---	---	---	---	---
UYD---------- Urban land-Berks	---	---	---	---	---	---	---
UZB---------- Urban land-Edom	---	---	---	---	---	---	---
UZD---------- Urban land-Edom	---	---	---	---	---	---	---
VaC---------- Vanderlip	70	14	55	30	3.0	2.0	4.5
VdD---------- Vanderlip	---	---	---	---	---	---	---
WeB---------- Weikert	60	12	50	25	2.0	2.0	4.0
WeC---------- Weikert	60	12	45	20	2.0	2.0	4.0
WeD---------- Weikert	---	---	---	---	---	---	---
WhB---------- Wharton	90	18	65	40	3.5	3.0	6.5
WhC---------- Wharton	80	16	60	35	3.5	3.0	6.5
WvB---------- Wharton Variant	90	18	60	40	3.5	3.0	6.0

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.
** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Absence of an entry indicates no acreage]

Class	Total acreage	Major management concerns (Subclass)		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	Acres
I	1,473	---	---	---
II	54,676	50,325	4,351	---
III	42,544	38,581	3,963	---
IV	39,981	26,527	13,106	348
V	---	---	---	---
VI	61,911	10,270	---	51,641
VII	116,820	26,477	---	90,343
VIII	5,276	---	---	5,276

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
AbB---- Albrights	3w	Slight	Moderate	Slight	Slight	Northern red oak----	70	Red pine, eastern white pine, Japanese larch, Norway spruce, white spruce.
						Yellow-poplar-------	75	
						White ash----------	---	
						Red maple----------	---	
AbC, AcB---- Albrights	3w	Slight	Moderate	Slight	Slight	Northern red oak----	70	Red pine, eastern white pine, Japanese larch, Norway spruce, white spruce.
						Yellow-poplar-------	75	
						White ash----------	---	
						Red maple----------	---	
AcD---- Albrights	3r	Slight	Moderate	Slight	Slight	Northern red oak----	70	Red pine, eastern white pine, Japanese larch, Norway spruce, white spruce.
						Yellow-poplar-------	75	
						White ash----------	---	
						Red maple----------	---	
AnB---- Andover Variant	3w	Slight	Severe	Severe	Moderate	Northern red oak----	70	Eastern white pine, red maple, Norway spruce.
						Yellow-poplar-------	83	
AoB---- Andover Variant	3x	Slight	Severe	Severe	Moderate	Northern red oak----	70	Eastern white pine, red maple, Norway spruce.
						Yellow-poplar-------	75	
Ba*---- Basher	2o	Slight	Slight	Slight	Slight	Sugar maple---------	70	Eastern white pine, black walnut, Norway spruce, Japanese larch.
						Northern red oak----	80	
						American basswood---	85	
BeB, BeC---- Bedington	2o	Slight	Slight	Slight	Slight	Northern red oak----	75	Black walnut, yellow-poplar, eastern white pine, Japanese larch, Norway spruce, Virginia pine.
						Yellow-poplar-------	85	
BdD---- Bedington	2r	Moderate	Moderate	Slight	Slight	Northern red oak----	75	Black walnut, yellow-poplar, eastern white pine, Japanese larch, Norway spruce, Virginia pine.
						Yellow-poplar-------	85	
BkB, BkC---- Berks	3f	Slight	Slight	Moderate	Slight	Northern red oak----	70	Virginia pine, eastern white pine, Japanese larch, Norway spruce, red pine.
						Black oak----------	70	
						Virginia pine-------	70	
BkD---- Berks	3f	Slight	Moderate	Moderate	Slight	Northern red oak----	70	Virginia pine, eastern white pine, Japanese larch, Norway spruce, red pine.
						Black oak----------	70	
						Virginia pine-------	70	
BmC*: Berks----	3f	Slight	Slight	Moderate	Slight	Northern red oak----	70	Virginia pine, eastern white pine, Japanese larch, Norway spruce, red pine.
						Black oak----------	70	
						Virginia pine-------	70	
Weikert----	4d	Slight	Slight	Severe	Moderate	Northern red oak----	59	Virginia pine, shortleaf pine, red pine, eastern white pine.
						Virginia pine-------	56	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
BmD*:								
Berks	3f	Slight	Moderate	Moderate	Slight	Northern red oak Black oak Virginia pine	70 70 70	Virginia pine, eastern white pine, Japanese larch, Norway spruce, red pine.
Weikert	4d	Slight	Moderate	Severe	Moderate	Northern red oak Virginia pine	64 60	Eastern white pine, shortleaf pine, Virginia pine.
BmF*:								
Berks	3f	Moderate	Severe	Moderate	Slight	Northern red oak Black oak Virginia pine	70 70 70	Virginia pine, eastern white pine, Japanese larch, Norway spruce, red pine.
Weikert	4d	Moderate	Severe	Severe	Moderate	Northern red oak Virginia pine	64 60	Eastern white pine, shortleaf pine, Virginia pine.
BoB Blairton	3w	Slight	Moderate	Slight	Slight	Northern red oak White ash Sugar maple Yellow-poplar	70 70 70 80	Yellow-poplar, Japanese larch, eastern white pine, Norway spruce.
BoC Blairton	3w	Slight	Moderate	Slight	Slight	Northern red oak White ash Sugar maple Yellow-poplar	70 70 70 80	Yellow-poplar, Japanese larch, eastern white pine, Norway spruce.
BrB Brinkerton	2w	Slight	Severe	Severe	Moderate	Northern red oak	77	Eastern white pine, white spruce, red maple, yellow-poplar.
BrC Brinkerton	2w	Moderate	Severe	Severe	Moderate	Northern red oak	77	Eastern white pine, white spruce, red maple, yellow-poplar.
BuB, BuC Buchanan	3w	Slight	Moderate	Slight	Slight	Northern red oak Yellow-poplar	66 91	Northern red oak, yellow-poplar, sugar maple, eastern white pine, Japanese larch, Norway spruce.
BxB Buchanan	3x	Slight	Moderate	Slight	Slight	Northern red oak Yellow-poplar	66 91	Northern red oak, yellow-poplar, sugar maple, eastern white pine, Japanese larch, Norway spruce.
BxD Buchanan	3x	Slight	Moderate	Slight	Slight	Northern red oak Yellow-poplar	66 91	Northern red oak, yellow-poplar, sugar maple, eastern white pine, Japanese larch, Norway spruce.
CaB Cavode	2w	Slight	Moderate	Moderate	Moderate	Northern red oak Yellow-poplar	83 95	Eastern white pine, yellow-poplar, black cherry, Norway spruce, white spruce.
CbB Clarksburg	3o	Slight	Slight	Slight	Slight	Northern red oak Yellow-poplar	70 85	Eastern white pine, yellow-poplar, Japanese larch, Norway spruce.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
CbC---- Clarksburg	3o	Slight	Slight	Slight	Slight	Northern red oak----	70	Eastern white pine, yellow-poplar, Japanese larch, Norway spruce.
						Yellow-poplar-------	85	
CvB, CyB---- Clymer	2o	Slight	Slight	Slight	Slight	Northern red oak----	77	Eastern white pine, Virginia pine, black cherry, yellow-poplar.
						Yellow-poplar-------	90	
						Eastern white pine--	90	
CyD---- Clymer	2r	Slight	Moderate	Slight	Slight	Northern red oak----	83	Eastern white pine, black cherry, yellow-poplar, Virginia pine.
						Yellow-poplar-------	95	
EdB, EdC---- Edom	2o	Slight	Slight	Slight	Slight	Northern red oak----	80	Eastern white pine, yellow-poplar, Norway spruce, Virginia pine.
						Yellow-poplar-------	90	
EdD---- Edom	2r	Slight	Moderate	Slight	Slight	Northern red oak----	80	Eastern white pine, yellow-poplar, Norway spruce, Virginia pine.
						Yellow-poplar-------	90	
EmB*, EmC*: Edom----	2o	Slight	Slight	Slight	Slight	Northern red oak----	80	Eastern white pine, yellow-poplar, Norway spruce, Virginia pine.
						Yellow-poplar-------	90	
Weikert----	4d	Slight	Slight	Severe	Moderate	Northern red oak----	59	Virginia pine, shortleaf pine, red pine, eastern white pine.
						Virginia pine-------	56	
EmD*: Edom----	2r	Moderate	Moderate	Slight	Slight	Northern red oak----	80	Eastern white pine, yellow-poplar, Norway spruce, Virginia pine.
						Yellow-poplar-------	90	
Weikert----	4d	Slight	Moderate	Severe	Moderate	Northern red oak----	64	Eastern white pine, shortleaf pine, Virginia pine.
						Virginia pine-------	60	
ErB---- Ernest	2w	Slight	Moderate	Slight	Slight	Northern red oak----	80	Eastern white pine, Norway spruce.
						Yellow-poplar-------	90	
ErC---- Ernest	2w	Moderate	Moderate	Slight	Slight	Northern red oak----	80	Eastern white pine, Norway spruce.
						Yellow-poplar-------	90	
GpB, GpC---- Gilpin	2o	Slight	Slight	Slight	Slight	Northern red oak----	80	Japanese larch, Virginia pine, eastern white pine, black cherry, yellow-poplar.
						Yellow-poplar-------	95	
GpD---- Gilpin	2r	Slight	Moderate	Slight	Slight	Northern red oak----	80	Japanese larch, Virginia pine, eastern white pine, black cherry, yellow-poplar.
						Yellow-poplar-------	95	
HeB*: Hagerstown----	1c	Slight	Moderate	Slight	Slight	Northern red oak----	85	Black walnut, yellow-poplar, eastern white pine, Norway spruce.
						Yellow-poplar-------	95	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
HeB*:								
Rock outcrop.								
HeD*:								
Hagerstown	1c	Moderate	Severe	Slight	Slight	Northern red oak Yellow-poplar	85 95	Black walnut, yellow-poplar, eastern white pine, Norway spruce.
Rock outcrop.								
HgB, HgC, HhB, HhC-Hazleton	3o	Slight	Slight	Slight	Slight	Northern red oak Yellow-poplar	70 80	Japanese larch, eastern white pine, Norway spruce, Austrian pine, black cherry.
HhF Hazleton	3r	Moderate	Severe	Slight	Slight	Northern red oak Yellow-poplar	70 80	Japanese larch, eastern white pine, Norway spruce, Austrian pine, black cherry.
Ho Holly	2w	Slight	Severe	Severe	Moderate	Pin oak Swamp white oak Red maple White ash	90 --- --- ---	Red maple, white ash, eastern cottonwood.
HuB, HuC, HxB2, HxC2 Hublersburg	2o	Slight	Slight	Slight	Slight	Northern red oak White ash Sugar maple	80 80 80	Eastern white pine, yellow-poplar, Norway spruce, black walnut, Virginia pine, red pine.
HxD2 Hublersburg	2r	Moderate	Moderate	Slight	Slight	Northern red oak White ash Sugar maple	80 80 80	Eastern white pine, yellow-poplar, Norway spruce, black walnut, Virginia pine, red pine.
LaB, LaC Laidig	3o	Slight	Slight	Slight	Slight	Northern red oak Yellow-poplar Eastern white pine Virginia pine	69 85 80 70	Eastern white pine, yellow-poplar, black walnut, Virginia pine, Japanese larch, Norway spruce, black locust.
LaD Laidig	3r	Slight	Moderate	Slight	Slight	Northern red oak Yellow-poplar Eastern white pine Virginia pine	69 85 80 70	Eastern white pine, yellow-poplar, black walnut, Virginia pine, Japanese larch, Norway spruce, black locust.
LeB Laidig	3x	Slight	Moderate	Slight	Slight	Northern red oak Yellow-poplar Eastern white pine Virginia pine	70 80 80 70	Eastern white pine, yellow-poplar, black walnut, Virginia pine, Japanese larch, Norway spruce, black locust.
LeD Laidig	3x	Slight	Moderate	Slight	Slight	Northern red oak Yellow-poplar Eastern white pine Virginia pine	70 80 80 70	Eastern white pine, yellow-poplar, black walnut, Virginia pine, Japanese larch, Norway spruce, black locust.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
LeF---------- Laidig	3x	Moderate	Severe	Slight	Slight	Northern red oak----	70	Eastern white pine, yellow-poplar, black walnut, Virginia pine, Japanese larch, Norway spruce, black locust
						Yellow-poplar-------	80	
						Eastern white pine--	80	
						Virginia pine-------	70	
LkB, LkC---------- Leck Kill	3o	Slight	Slight	Slight	Slight	Northern red oak----	68	Eastern white pine, Virginia pine.
LkD---------- Leck Kill	3r	Slight	Moderate	Slight	Slight	Northern red oak----	68	Eastern white pine, Virginia pine.
LLF---------- Leck Kill	3r	Moderate	Severe	Slight	Slight	Northern red oak----	68	Eastern white pine, Virginia pine.
LmB---------- Leetonia	5f	Slight	Slight	Severe	Slight	Northern red oak----	50	Virginia pine, pitch pine.
						Virginia pine-------	60	
LnD---------- Lehew	3r	Slight	Moderate	Slight	Slight	Northern red oak----	67	Eastern white pine, Virginia pine, red pine.
						Virginia pine-------	60	
LnF---------- Lehew	3r	Moderate	Severe	Slight	Slight	Northern red oak----	67	Eastern white pine, Virginia pine, red pine.
						Virginia pine-------	60	
Lo*---------- Linden	1o	Slight	Slight	Slight	Slight	Northern red oak----	90	Yellow-poplar, black walnut, black cherry, red pine, Japanese larch, Norway spruce, eastern white pine.
						White ash----------	90	
						Sugar maple---------	90	
						Black cherry--------	90	
						Black walnut--------	90	
						Eastern white pine--	90	
						Yellow-poplar-------	100	
Lp---------- Lobdell	1o	Slight	Slight	Slight	Slight	Northern red oak----	87	Eastern white pine, black walnut, yellow-poplar, white ash, Norway spruce.
						Yellow-poplar-------	96	
						Sugar maple---------	---	
						Black walnut--------	---	
MeB, MeC---------- Meckesville	2o	Slight	Slight	Slight	Slight	Northern red oak----	80	Eastern white pine, Japanese larch, yellow-poplar, black cherry, Norway spruce.
						Yellow-poplar-------	90	
MkB---------- Meckesville	2o	Slight	Slight	Slight	Slight	Northern red oak----	80	Eastern white pine, Japanese larch, yellow-poplar, black cherry, Norway spruce.
						Yellow-poplar-------	90	
MkD---------- Meckesville	2r	Slight	Moderate	Slight	Slight	Northern red oak----	80	Eastern white pine, Japanese larch, yellow-poplar, black cherry, Norway spruce.
						Yellow-poplar-------	90	
MnB, MnC---------- Mertz	2f	Slight	Slight	Moderate	Slight	Northern red oak----	80	Yellow-poplar, eastern white pine, Japanese larch, Norway spruce, Virginia pine.
						Virginia pine-------	---	
						Yellow-poplar-------	90	
MnD---------- Mertz	2r	Slight	Moderate	Moderate	Slight	Northern red oak----	80	Yellow-poplar, eastern white pine, Japanese larch, Norway spruce, Virginia pine.
						Virginia pine-------	---	
						Yellow-poplar-------	90	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
MoB---------- Monongahela	3w	Slight	Moderate	Slight	Slight	Northern red oak----	70	Eastern white pine, loblolly pine, Virginia pine, yellow-poplar, black cherry, Japanese larch.
						Yellow-poplar-------	85	
						Eastern white pine--	72	
						Virginia pine-------	77	
						Loblolly pine-------	82	
MrB, MrC---------- Morrison	3o	Slight	Slight	Slight	Slight	Northern red oak----	71	Eastern white pine, yellow-poplar, Norway spruce, red pine, Virginia pine, Japanese larch.
						Yellow-poplar-------	85	
MrD---------- Morrison	3r	Slight	Moderate	Slight	Slight	Northern red oak----	71	Eastern white pine, yellow-poplar, Norway spruce, red pine, Virginia pine, Japanese larch.
						Yellow-poplar-------	85	
MsB---------- Morrison	3o	Slight	Slight	Slight	Slight	Northern red oak----	71	Eastern white pine, yellow-poplar, Norway spruce, red pine, Virginia pine, Japanese larch.
						Yellow-poplar-------	85	
MsD---------- Morrison	3r	Slight	Moderate	Slight	Slight	Northern red oak----	71	Eastern white pine, yellow-poplar, Norway spruce, red pine, Virginia pine, Japanese larch.
						Yellow-poplar-------	85	
MsF---------- Morrison	3r	Moderate	Severe	Slight	Slight	Northern red oak----	71	Eastern white pine, yellow-poplar, Norway spruce, red pine, Virginia pine, Japanese larch.
						Yellow-poplar-------	85	
MuB, MuC---------- Murrill	3o	Slight	Slight	Slight	Slight	Northern red oak----	72	Eastern white pine, yellow-poplar, black walnut, Norway spruce, Virginia pine, Japanese larch.
						Yellow-poplar-------	85	
MuD---------- Murrill	3r	Slight	Moderate	Slight	Slight	Northern red oak----	72	Eastern white pine, yellow-poplar, black walnut, Norway spruce, Virginia pine, Japanese larch.
						Yellow-poplar-------	85	
MxB, MxD---------- Murrill	3x	Slight	Moderate	Slight	Slight	Northern red oak----	72	Eastern white pine, yellow-poplar, black walnut, Norway spruce, Virginia pine, Japanese larch.
						Yellow-poplar-------	85	
OuC---------- Opequon	3c	Moderate	Moderate	Severe	Moderate	Northern red oak----	70	Virginia pine, eastern white pine.
						Yellow-poplar-------	80	
OuD---------- Opequon	3c	Severe	Severe	Severe	Moderate	Northern red oak----	70	Virginia pine, eastern white pine.
						Yellow-poplar-------	80	
OxF*:								
Opequon----------	3c	Severe	Severe	Severe	Moderate	Northern red oak----	70	Virginia pine, eastern white pine.
						Yellow-poplar-------	80	
Hagerstown--------	1c	Severe	Severe	Slight	Slight	Northern red oak----	85	Black walnut, yellow-poplar, eastern white pine, Norway spruce.
						Yellow-poplar-------	95	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
OxF*:								
Rock outcrop.								
Pu---------- Purdy	1w	Slight	Severe	Severe	Severe	Pin oak---------- Shortleaf pine------ Virginia pine------- Yellow-poplar------- Sweetgum----------	85 75 75 90 85	Virginia pine, eastern white pine.
Ty---------- Tyler	2w	Slight	Moderate	Moderate	Moderate	Northern red oak---- Yellow-poplar------- Pin oak---------- Red maple---------- White ash----------	80 90 90 --- ---	Eastern white pine, yellow-poplar.
UYB*:								
Urban land.								
Berks---------- 	3f	Slight	Slight	Moderate	Slight	Northern red oak---- Black oak---------- Virginia pine-------	70 70 70	Virginia pine, eastern white pine, Japanese larch, Norway spruce, red pine.
UYD*:								
Urban land.								
Berks---------- 	3f	Slight	Moderate	Moderate	Slight	Northern red oak---- Black oak---------- Virginia pine-------	70 70 70	Virginia pine, eastern white pine, Japanese larch, Norway spruce, red pine.
UZB*:								
Urban land.								
Edom---------- 	2o	Slight	Slight	Slight	Slight	Northern red oak---- Yellow-poplar-------	80 90	Eastern white pine, yellow-poplar, Norway spruce, Virginia pine.
UZD*:								
Urban land.								
Edom---------- 	2r	Slight	Moderate	Slight	Slight	Northern red oak---- Yellow-poplar-------	80 90	Eastern white pine, yellow-poplar, Norway spruce, Virginia pine.
VaC---------- Vanderlip	4s	Slight	Moderate	Moderate	Slight	Eastern white pine-- Northern red oak---- Black oak---------- Virginia pine-------	60 60 --- ---	Eastern white pine, Virginia pine, red pine, Japanese larch.
VdD---------- Vanderlip	4s	Slight	Moderate	Moderate	Slight	Eastern white pine-- Northern red oak---- Black oak---------- Virginia pine-------	60 60 --- ---	Eastern white pine, Virginia pine, red pine, Japanese larch.
WeB, WeC---------- Weikert	4d	Slight	Slight	Severe	Moderate	Northern red oak---- Virginia pine-------	59 56	Virginia pine, shortleaf pine, red pine, eastern white pine.
WeD---------- Weikert	4d	Slight	Moderate	Severe	Moderate	Northern red oak---- Virginia pine-------	64 60	Eastern white pine, shortleaf pine, Virginia pine.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
WhB---------- Wharton	2o	Slight	Slight	Slight	Slight	Northern red oak----	76	Eastern white pine, yellow-poplar.
						Yellow-poplar-------	90	
WhC---------- Wharton	2r	Moderate	Slight	Slight	Slight	Northern red oak----	76	Eastern white pine, yellow-poplar.
						Yellow-poplar-------	90	
WvB---------- Wharton Variant	3w	Slight	Moderate	Moderate	Moderate	Northern red oak----	70	Eastern white pine, yellow-poplar, Norway spruce, white spruce.
						Yellow-poplar-------	75	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AbB---- Albrights	Moderate: wetness, small stones.	Moderate: wetness, small stones.	Severe: wetness.	Moderate: wetness, small stones.	Moderate: small stones, wetness.
AbC---- Albrights	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope, wetness.	Moderate: wetness, small stones.	Moderate: slope, small stones.
AcB---- Albrights	Moderate: wetness, large stones.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, large stones.	Moderate: large stones, wetness.
AcD---- Albrights	Severe: slope.	Severe: slope.	Severe: slope, wetness.	Moderate: slope, large stones, wetness.	Severe: slope.
AnB---- Andover Variant	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
AoB---- Andover Variant	Severe: large stones, wetness.	Severe: wetness.	Severe: large stones, wetness.	Severe: wetness, large stones.	Severe: large stones, wetness.
Ba*---- Basher	Severe: floods.	Moderate: floods.	Moderate: floods, wetness.	Slight----	Moderate: floods.
BeB---- Bedington	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Moderate: small stones.	Moderate: small stones.
BeC---- Bedington	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Moderate: small stones.	Moderate: slope, small stones.
BdD---- Bedington	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: large stones, slope.	Severe: slope.
BkB---- Berks	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Moderate: small stones.	Severe: small stones.
BkC---- Berks	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Moderate: small stones.	Severe: small stones.
BkD---- Berks	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.
BmC*:					
Berks----	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Moderate: small stones.	Severe: small stones.
Weikert----	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, depth to rock, small stones.	Moderate: small stones.	Moderate: slope, small stones, droughty.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
BmD*:					
Berks	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.
Weikert	Severe: slope.	Severe: slope.	Severe: slope, depth to rock, small stones.	Moderate: slope, small stones.	Severe: slope.
BmF*:					
Berks	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope, small stones.
Weikert	Severe: slope.	Severe: slope.	Severe: slope, depth to rock, small stones.	Severe: slope.	Severe: slope.
BoB Blairton	Moderate: percs slowly, wetness.	Moderate: wetness.	Moderate: slope, wetness, depth to rock.	Moderate: wetness.	Moderate: depth to rock, wetness.
BoC Blairton	Moderate: slope, percs slowly, wetness.	Moderate: slope, wetness.	Severe: slope.	Moderate: wetness.	Moderate: slope, depth to rock, wetness.
BrB Brinkerton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
BrC Brinkerton	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.
BuB Buchanan	Moderate: wetness, small stones.	Moderate: wetness, small stones.	Severe: small stones.	Moderate: wetness, small stones.	Moderate: small stones, wetness.
BuC Buchanan	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope, small stones.	Moderate: wetness, small stones.	Moderate: small stones, wetness, slope.
BxB Buchanan	Severe: large stones.	Moderate: wetness, large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.
BxD Buchanan	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones.	Severe: large stones.	Severe: slope, large stones.
CaB Cavode	Moderate: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
CbB Clarksburg	Moderate: percs slowly, wetness.	Slight	Moderate: slope, wetness.	Slight	Slight.
CbC Clarksburg	Moderate: slope, wetness.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
CvB---------- Clymer	Slight----------	Slight----------	Moderate: slope, small stones.	Slight----------	Slight.
CyB---------- Clymer	Moderate: large stones.	Slight----------	Moderate: slope, large stones.	Moderate: large stones.	Moderate: large stones.
CyD---------- Clymer	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, large stones.	Severe: slope.
DR*: Dystrochrepts. Rubble land.					
EdB---------- Edom	Moderate: too clayey.	Moderate: too clayey.	Moderate: slope, too clayey.	Moderate: too clayey.	Moderate: too clayey.
EdC---------- Edom	Moderate: slope, too clayey.	Moderate: slope, too clayey.	Severe: slope.	Moderate: too clayey.	Moderate: slope, too clayey.
EdD---------- Edom	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, too clayey.	Severe: slope.
EmB*: Edom----------	Moderate: too clayey.	Moderate: too clayey.	Moderate: slope, too clayey.	Moderate: too clayey.	Moderate: too clayey.
Weikert----------	Moderate: small stones.	Moderate: small stones.	Severe: depth to rock, small stones.	Moderate: small stones.	Moderate: small stones, droughty.
EmC*: Edom----------	Moderate: slope, too clayey.	Moderate: slope, too clayey.	Severe: slope.	Moderate: too clayey.	Moderate: slope, too clayey.
Weikert----------	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, depth to rock, small stones.	Moderate: small stones.	Moderate: slope, small stones, droughty.
EmD*: Edom----------	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, too clayey.	Severe: slope.
Weikert----------	Severe: slope.	Severe: slope.	Severe: slope, depth to rock, small stones.	Moderate: slope, small stones.	Severe: slope.
ErB---------- Ernest	Moderate: percs slowly, wetness.	Slight----------	Moderate: slope, percs slowly.	Slight----------	Slight.
ErC---------- Ernest	Moderate: slope, wetness.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
GpB Gilpin	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Moderate: small stones.	Moderate: depth to rock, small stones.
GpC Gilpin	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: small stones, slope.	Moderate: small stones.	Moderate: slope, depth to rock, small stones.
GpD Gilpin	Severe: slope.	Severe: slope.	Severe: small stones, slope.	Moderate: slope, small stones.	Severe: slope.
HeB*: Hagerstown	Slight	Slight	Moderate: slope.	Slight	Slight.
Rock outcrop.					
HeD*: Hagerstown	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Rock outcrop.					
HgB Hazleton	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Moderate: small stones.	Moderate: small stones.
HgC Hazleton	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Moderate: small stones.	Moderate: slope, small stones.
HhB Hazleton	Moderate: large stones.	Moderate: small stones.	Severe: small stones.	Moderate: large stones.	Moderate: large stones.
HhC Hazleton	Moderate: slope, large stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Moderate: large stones.	Moderate: slope, large stones.
HhF Hazleton	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Ho Holly	Severe: wetness, floods.	Severe: wetness.	Severe: wetness, floods.	Severe: wetness.	Severe: wetness, floods.
HuB Hublersburg	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Moderate: small stones.	Moderate: small stones.
HuC Hublersburg	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Moderate: small stones.	Moderate: small stones, slope.
HxB2 Hublersburg	Moderate: small stones, too clayey.	Moderate: small stones, too clayey.	Severe: small stones.	Moderate: small stones, too clayey.	Moderate: small stones.
HxC2 Hublersburg	Moderate: slope, small stones, too clayey.	Moderate: slope, small stones, too clayey.	Severe: slope, small stones.	Moderate: small stones, too clayey.	Moderate: small stones, slope.
HxD2 Hublersburg	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones, too clayey.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
LaB---------- Laidig	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Moderate: small stones.	Moderate: small stones.
LaC---------- Laidig	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Moderate: small stones.	Moderate: slope, small stones.
LaD---------- Laidig	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.	Severe: slope.
LeB---------- Laidig	Severe: large stones.	Moderate: small stones, large stones.	Severe: large stones, small stones.	Severe: large stones.	Severe: large stones.
LeD---------- Laidig	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones, small stones.	Severe: large stones.	Severe: slope, large stones.
LeF---------- Laidig	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones, small stones.	Severe: slope, large stones.	Severe: slope, large stones.
LkB---------- Leck Kill	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Moderate: small stones.	Moderate: small stones.
LkC---------- Leck Kill	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Moderate: small stones.	Moderate: slope, small stones.
LkD---------- Leck Kill	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.	Severe: slope.
LLF---------- Leck Kill	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
LmB---------- Leetonia	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Moderate: small stones.	Severe: too sandy.
LnD---------- Lehew	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, large stones.	Severe: slope.
LnF---------- Lehew	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Lo*---------- Linden	Moderate: floods.	Slight----------	Moderate: floods.	Slight----------	Moderate: floods.
Lp---------- Lobdell	Severe: floods.	Slight----------	Moderate: wetness, floods.	Slight----------	Moderate: floods.
MeB---------- Meckesville	Moderate: percs slowly, small stones.	Moderate: small stones.	Severe: small stones.	Moderate: small stones.	Moderate: small stones.
MeC---------- Meckesville	Moderate: slope, small stones, percs slowly.	Moderate: slope, small stones.	Severe: slope, small stones.	Moderate: small stones.	Moderate: slope, small stones.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
MkB---------- Meckesville	Moderate: large stones, percs slowly.	Moderate: small stones.	Severe: small stones.	Moderate: large stones.	Moderate: large stones.
MkD---------- Meckesville	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, large stones.	Severe: slope.
MnB---------- Mertz	Moderate: percs slowly, small stones.	Moderate: small stones.	Severe: small stones.	Moderate: small stones.	Moderate: small stones.
MnC---------- Mertz	Moderate: slope, percs slowly, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Moderate: small stones.	Moderate: slope, small stones.
MnD---------- Mertz	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.	Severe: slope.
MoB---------- Monongahela	Moderate: wetness, percs slowly.	Slight----------	Moderate: slope, wetness.	Slight----------	Slight.
MrB---------- Morrison	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
MrC---------- Morrison	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate.
MrD---------- Morrison	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
MsB---------- Morrison	Moderate: large stones.	Slight----------	Moderate: large stones, slope.	Moderate: large stones.	Moderate: large stones.
MsD---------- Morrison	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, large stones.	Severe: slope.
MsF---------- Morrison	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
MuB---------- Murrill	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Moderate: small stones.	Moderate: small stones.
MuC---------- Murrill	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Moderate: small stones.	Moderate: slope, small stones.
MuD---------- Murrill	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.	Severe: slope.
MxB---------- Murrill	Severe: large stones.	Moderate: large stones, small stones.	Severe: large stones, small stones.	Severe: large stones.	Severe: large stones.
MxD---------- Murrill	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones, small stones.	Severe: large stones.	Severe: slope, large stones.
OuC---------- Opequon	Moderate: slope, too clayey.	Moderate: slope, too clayey.	Severe: slope, depth to rock.	Moderate: too clayey.	Severe: depth to rock.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
OuD---------- Opequon	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.	Moderate: slope, too clayey.	Severe: slope, depth to rock.
OxF*: Opequon----------	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.
Hagerstown----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.					
Pt*: Pits.					
Dumps.					
Pu---------- Purdy	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Qu*: Quarries.					
Dumps.					
Ty---------- Tyler	Moderate: wetness, percs slowly.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
UD*: Udifluvents.					
Dystrochrepts.					
US*. Udorthents					
Ux*. Urban land					
UYB*: Urban land.					
Berks----------	Moderate: small stones.	Moderate: small stones	Severe: small stones.	Moderate: small stones.	Severe: small stones.
UYD*: Urban land.					
Berks----------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.
UZB*: Urban land.					
Edom----------	Moderate: too clayey.	Moderate: too clayey.	Moderate: slope, too clayey.	Moderate: too clayey.	Moderate: too clayey.
UZD*: Urban land.					

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
UZD*: Edom	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, too clayey.	Severe: slope.
VaC Vanderlip	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Severe: too sandy.
VdD Vanderlip	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, too sandy, large stones.	Severe: slope, too sandy.
WeB Weikert	Moderate: small stones.	Moderate: small stones.	Severe: depth to rock, small stones.	Moderate: small stones.	Moderate: small stones, droughty.
WeC Weikert	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, depth to rock, small stones.	Moderate: small stones.	Moderate: slope, small stones, droughty.
WeD Weikert	Severe: slope.	Severe: slope.	Severe: slope, depth to rock, small stones.	Moderate: slope, small stones.	Severe: slope.
WhB Wharton	Moderate: percs slowly, wetness.	Slight	Moderate: slope, percs slowly, wetness.	Slight	Slight.
WhC Wharton	Moderate: slope, percs slowly, wetness.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
WvB Wharton Variant	Moderate: wetness, percs slowly.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: slope, wetness.

*See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AbB---- Albrights	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
AbC---- Albrights	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
AcB---- Albrights	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
AcD---- Albrights	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
AnB---- Andover Variant	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
AoB---- Andover Variant	Very poor.	Poor	Good	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
Ba*---- Basher	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
BeB---- Bedington	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BeC---- Bedington	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
BdD---- Bedington	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
BkB---- Berks	Poor	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Very poor.
BkC---- Berks	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
BkD---- Berks	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
BmC*:										
Berks----	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Weikert----	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
BmD*:										
Berks----	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Weikert----	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
BmF*:										
Berks----	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Weikert----	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
BoB---- Blairton	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
BoC---- Blairton	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
BrB---- Brinkerton	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
BrC---- Brinkerton	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
BuB---- Buchanan	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BuC---- Buchanan	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
BxB---- Buchanan	Very poor.	Very poor.	Good	Good	Good	Fair	Very poor.	Poor	Fair	Poor.
BxD---- Buchanan	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
CaB---- Cavode	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CbB---- Clarksburg	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CbC---- Clarksburg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CvB---- Clymer	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CyB---- Clymer	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
CyD---- Clymer	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
DR*: Dystrochrepts.										
Rubble land.										
EdB---- Edom	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
EdC---- Edom	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
EdD---- Edom	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
EmB*: Edom----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Weikert----	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.
EmC*: Edom----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Weikert----	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
EmD*:										
Edom	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Weikert	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
ErB Ernest	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ErC Ernest	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
GpB Gilpin	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
GpC Gilpin	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
GpD Gilpin	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
HeB*:										
Hagerstown	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Rock outcrop.										
HeD*:										
Hagerstown	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Rock outcrop.										
HgB Hazleton	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HgC Hazleton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HhB Hazleton	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
HhC, HhF Hazleton	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Ho Holly	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
HuB Hublersburg	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HuC Hublersburg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HxB2 Hublersburg	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HxC2 Hublersburg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HxD2 Hublersburg	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LaB Laidig	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
LaC---- Laidig	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
LaD---- Laidig	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
LeB---- Laidig	Very poor.	Very poor.	Good	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
LeD---- Laidig	Very poor.	Very poor.	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
LeF---- Laidig	Very poor.	Very poor.	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
LkB---- Leck Kill	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LkC---- Leck Kill	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LkD---- Leck Kill	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LLF---- Leck Kill	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LmB---- Leetonia	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
LnD---- Lehew	Very poor.	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
LnF---- Lehew	Very poor.	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Lo*---- Linden	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Lp---- Lobdell	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
MeB---- Meckesville	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MeC---- Meckesville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MkB---- Meckesville	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
MkD---- Meckesville	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
MnB, MnC---- Mertz	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MnD---- Mertz	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MoB---- Monongahela	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MrB---- Morrison	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MrC---- Morrison	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
MrD---- Morrison	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MsB---- Morrison	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
MsD---- Morrison	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
MsF---- Morrison	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
MuB---- Murrill	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MuC---- Murrill	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MuD---- Murrill	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MxB---- Murrill	Very poor.	Very poor.	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
MxD---- Murrill	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
OuC, OuD---- Opequon	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
OxF*:										
Opequon----	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Hagerstown----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Rock outcrop.										
Pt*:										
Pits.										
Dumps.										
Pu---- Purdy	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Qu*:										
Quarries.										
Dumps.										
Ty---- Tyler	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
UD*:										
Udifluvents.										
Dystrochrepts.										
US*. Udorthents										
Ux*. Urban land										

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
UYB*: Urban land.										
Berks	Poor	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Very poor.
UYD*: Urban land.										
Berks	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
UZB*: Urban land.										
Edom	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UZD*: Urban land.										
Edom	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
VaC---- Vanderlip	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
VdD---- Vanderlip	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
WeB, WeC, WeD---- Weikert	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
WhB---- Wharton	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WhC---- Wharton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
WvB---- Wharton Variant	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AbB--- Albrights	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Moderate: small stones, wetness.
AbC--- Albrights	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Moderate: wetness, slope.	Moderate: slope, small stones.
AcB--- Albrights	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Moderate: large stones, wetness.
AcD--- Albrights	Severe: slope, wetness.	Severe: slope, wetness.	Severe: slope, wetness.	Severe: slope, wetness.	Severe: slope.	Severe: slope.
AnB--- Andover Variant	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness, frost action.	Severe: wetness.
AoB--- Andover Variant	Severe: large stones, wetness.	Severe: large stones, wetness, frost action.	Severe: large stones, wetness.	Severe: large stones, wetness, frost action.	Severe: wetness, frost action.	Severe: large stones, wetness.
Ba*--- Basher	Severe: floods, wetness.	Severe: floods, frost action.	Severe: floods, wetness.	Severe: floods, frost action.	Severe: floods, frost action.	Moderate: floods.
BeB--- Bedington	Slight---	Moderate: frost action.	Slight---	Moderate: slope, frost action.	Moderate: frost action.	Moderate: small stones.
BeC--- Bedington	Moderate: slope.	Moderate: slope, frost action.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope, small stones.
BdD--- Bedington	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BkB--- Berks	Moderate: depth to rock.	Slight---	Moderate: depth to rock.	Moderate: slope.	Slight---	Severe: small stones.
BkC--- Berks	Moderate: slope, depth to rock.	Moderate: slope.	Moderate: slope, depth to rock.	Severe: slope.	Moderate: slope.	Severe: small stones.
BkD--- Berks	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, small stones.
BmC*: Berks---	Moderate: slope, depth to rock.	Moderate: slope.	Moderate: slope, depth to rock.	Severe: slope.	Moderate: slope.	Severe: small stones.
Weikert---	Severe: depth to rock.	Moderate: slope, depth to rock, frost action.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope, depth to rock, frost action.	Moderate: slope, small stones, droughty.
BmD*, BmF*: Berks---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, small stones.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
BmD*, BmF*: Weikert	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BoB---- Blairton	Severe: wetness.	Severe: frost action.	Severe: wetness.	Severe: frost action.	Severe: frost action.	Moderate: depth to rock, wetness.
BoC---- Blairton	Severe: wetness.	Severe: frost action.	Severe: wetness.	Severe: slope, frost action.	Severe: frost action.	Moderate: slope, depth to rock, wetness.
BrB---- Brinkerton	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness, frost action.	Severe: wetness.
BrC---- Brinkerton	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: slope, wetness, frost action.	Severe: wetness, frost action.	Severe: wetness.
BuB---- Buchanan	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Moderate: small stones, wetness.
BuC---- Buchanan	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Moderate: slope, wetness, frost action.	Moderate: small stones, wetness.
BxB---- Buchanan	Severe: wetness, large stones.	Severe: wetness, large stones.	Severe: wetness, large stones.	Severe: wetness, large stones.	Moderate: wetness, large stones.	Severe: large stones.
BxD---- Buchanan	Severe: slope, wetness, large stones.	Severe: slope, wetness, large stones.	Severe: slope, wetness, large stones.	Severe: slope, wetness, large stones.	Severe: slope.	Severe: slope.
CaB---- Cavode	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness, frost action.	Severe: frost action.	Moderate: wetness.
CbB---- Clarksburg	Moderate: wetness.	Moderate: frost action, wetness.	Severe: wetness.	Moderate: slope, frost action, wetness.	Moderate: low strength, frost action.	Slight.
CbC---- Clarksburg	Moderate: wetness, slope.	Moderate: frost action, wetness, slope.	Severe: wetness.	Severe: slope.	Moderate: slope, frost action, low strength.	Moderate: slope.
CvB---- Clymer	Moderate: depth to rock.	Moderate: frost action.	Moderate: depth to rock.	Moderate: slope, frost action.	Moderate: frost action.	Slight.
CyB---- Clymer	Moderate: large stones, depth to rock.	Moderate: large stones, frost action.	Moderate: depth to rock.	Moderate: slope, large stones.	Moderate: frost action.	Moderate: large stones.
CyD---- Clymer	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
DR*: Dystrochrepts. Rubble land.						

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
EdB---------- Edom	Moderate: too clayey.	Severe: low strength.	Moderate: low strength.	Severe: low strength.	Severe: low strength.	Moderate: too clayey.
EdC---------- Edom	Moderate: too clayey, slope.	Severe: low strength.	Moderate: slope, low strength.	Severe: slope, low strength.	Severe: low strength.	Moderate: slope, too clayey.
EdD---------- Edom	Severe: slope.	Severe: slope, low strength.	Severe: slope.	Severe: slope, low strength.	Severe: slope, low strength.	Severe: slope.
EmB*: Edom----------	Moderate: too clayey.	Severe: low strength.	Moderate: low strength.	Severe: low strength.	Severe: low strength.	Moderate: too clayey.
Weikert----------	Moderate: depth to rock.	Moderate: depth to rock, frost action.	Moderate: depth to rock.	Moderate: slope, depth to rock, frost action.	Moderate: depth to rock, frost action.	Moderate: small stones, droughty, depth to rock.
EmC*: Edom----------	Moderate: too clayey, slope.	Severe: low strength.	Moderate: slope, low strength.	Severe: slope, low strength.	Severe: low strength.	Moderate: slope, too clayey.
Weikert----------	Moderate: depth to rock, slope.	Moderate: slope, depth to rock, frost action.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope, depth to rock, frost action.	Moderate: slope, small stones, droughty.
EmD*: Edom----------	Severe: slope.	Severe: slope, low strength.	Severe: slope.	Severe: slope, low strength.	Severe: slope, low strength.	Severe: slope.
Weikert----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
ErB---------- Ernest	Moderate: wetness.	Moderate: wetness, low strength, frost action.	Severe: wetness.	Moderate: slope, wetness, frost action.	Moderate: wetness, low strength, frost action.	Slight.
ErC---------- Ernest	Moderate: slope, wetness.	Fair: slope, low strength, frost action.	Severe: wetness.	Severe: slope.	Moderate: slope, wetness, frost action.	Moderate: slope.
GpB---------- Gilpin	Moderate: depth to rock.	Moderate: frost action.	Moderate: depth to rock.	Moderate: slope, frost action.	Moderate: frost action.	Moderate: slope, depth to rock, small stones.
GpC---------- Gilpin	Moderate: slope, depth to rock.	Moderate: slope, frost action.	Moderate: slope, depth to rock.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope, depth to rock, small stones.
GpD---------- Gilpin	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
HeB*: Hagerstown-------	Moderate: depth to rock, too clayey.	Moderate: low strength, frost action.	Moderate: depth to rock, low strength.	Moderate: slope, low strength, frost action.	Severe: low strength.	Slight.
Rock outcrop.						

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
HeD*: Hagerstown	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, low strength.	Severe: slope.
Rock outcrop.						
HgB---- Hazleton	Moderate: small stones.	Moderate: frost action.	Slight	Moderate: slope, frost action.	Moderate: frost action.	Moderate: small stones.
HgC---- Hazleton	Moderate: slope, small stones.	Moderate: slope, frost action.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope, small stones.
HhB---- Hazleton	Moderate: large stones.	Moderate: large stones, frost action.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: frost action.	Moderate: large stones.
HhC---- Hazleton	Moderate: slope, large stones.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope, large stones.
HhF---- Hazleton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ho---- Holly	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness, frost action.	Severe: wetness, floods.
HuB---- Hublersburg	Moderate: too clayey.	Moderate: shrink-swell, frost action, low strength.	Moderate: shrink-swell.	Moderate: slope, shrink-swell, frost action.	Severe: low strength.	Moderate: small stones.
HuC---- Hublersburg	Moderate: slope, too clayey.	Moderate: slope, shrink-swell, frost action.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: small stones, slope.
HxB2---- Hublersburg	Moderate: too clayey.	Moderate: shrink-swell, frost action.	Moderate: shrink-swell.	Moderate: slope, shrink-swell, frost action.	Severe: low strength.	Moderate: small stones.
HxC2---- Hublersburg	Moderate: slope, too clayey.	Moderate: slope, shrink-swell, frost action.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: small stones, too clayey, slope.
HxD2---- Hublersburg	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, low strength.	Severe: slope.
LaB---- Laidig	Moderate: wetness.	Moderate: frost action.	Moderate: wetness.	Moderate: slope, frost action.	Moderate: frost action.	Moderate: small stones.
LaC---- Laidig	Moderate: wetness, slope.	Moderate: slope, frost action.	Moderate: slope, wetness.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope, small stones.
LaD---- Laidig	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
LeB---- Laidig	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Moderate: large stones, frost action.	Severe: large stones.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
LeD, LeF---------- Laidig	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones.
LkB---------- Leck Kill	Slight---------	Moderate: frost action.	Slight---------	Moderate: slope, frost action.	Moderate: frost action.	Moderate: small stones.
LkC---------- Leck Kill	Moderate: slope.	Moderate: slope, frost action.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope, small stones.
LkD, LLF---------- Leck Kill	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
LmB---------- Leetonia	Severe: cutbanks cave.	Slight---------	Moderate: depth to rock.	Moderate: slope.	Slight---------	Severe: too sandy.
LnD, LnF---------- Lehew	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.	Severe: slope.
Lo*---------- Linden	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: floods.
Lp---------- Lobdell	Severe: wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Severe: floods, frost action.	Moderate: floods, wetness.
MeB---------- Meckesville	Moderate: wetness.	Moderate: frost action.	Moderate: wetness.	Moderate: slope, frost action.	Moderate: frost action.	Moderate: small stones.
MeC---------- Meckesville	Moderate: slope, wetness.	Moderate: slope, frost action.	Moderate: slope, wetness.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope, small stones.
MkB---------- Meckesville	Moderate: wetness, large stones.	Moderate: frost action, large stones.	Moderate: wetness, large stones.	Moderate: frost action, large stones.	Moderate: frost action.	Slight.
MkD---------- Meckesville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
MnB---------- Mertz	Slight---------	Moderate: low strength, shrink-swell, frost action.	Moderate: low strength, shrink-swell.	Moderate: slope, shrink-swell, low strength.	Moderate: low strength, shrink-swell, frost action.	Moderate: small stones.
MnC---------- Mertz	Moderate: slope.	Moderate: slope, low strength, shrink-swell.	Moderate: slope, low strength, shrink-swell.	Severe: slope.	Moderate: slope, low strength, shrink-swell.	Moderate: slope, small stones.
MnD---------- Mertz	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
MoB---------- Monongahela	Moderate: wetness.	Severe: frost action.	Severe: wetness.	Severe: frost action.	Severe: frost action.	Slight.
MrB---------- Morrison	Slight---------	Moderate: frost action.	Slight---------	Moderate: slope, frost action.	Moderate: frost action.	Slight.
MrC---------- Morrison	Moderate: slope.	Moderate: slope, frost action.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
MrD---------- Morrison	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MsB---------- Morrison	Moderate: large stones.	Moderate: frost action, large stones.	Moderate: large stones.	Moderate: slope, frost action, large stones.	Moderate: frost action.	Moderate: large stones.
MsD, MsF---------- Morrison	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
MuB---------- Murrill	Moderate: small stones.	Moderate: frost action, low strength.	Moderate: shrink-swell, low strength.	Moderate: slope, frost action.	Moderate: frost action, low strength.	Moderate: small stones.
MuC---------- Murrill	Moderate: slope, small stones.	Moderate: slope, frost action, low strength.	Moderate: slope, shrink-swell, low strength.	Severe: slope.	Moderate: slope, frost action, low strength.	Moderate: slope, small stones.
MuD---------- Murrill	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
MxB---------- Murrill	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Moderate: large stones, frost action.	Severe: large stones.
MxD---------- Murrill	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones.
OuC---------- Opequon	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, low strength.	Severe: depth to rock.
OuD---------- Opequon	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock, low strength.	Severe: slope, depth to rock.
OxF*: Opequon----------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock, low strength.	Severe: slope, depth to rock.
Hagerstown-------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, low strength.	Severe: slope.
Rock outcrop.						
Pt*: Pits.						
Dumps.						
Pu---------- Purdy	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness, low strength, frost action.	Severe: wetness.
Qu*: Quarries.						
Dumps.						
Ty---------- Tyler	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness, frost action.	Severe: frost action, low strength, wetness.	Moderate: wetness.
UD*: Udifluvents.						

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
UD*: Dystrochrepts.						
US*. Udorthents						
Ux*. Urban land						
UYB*: Urban land.						
Berks	Moderate: depth to rock.	Slight	Moderate: depth to rock.	Moderate: slope.	Slight	Severe: small stones.
UYD*: Urban land.						
Berks	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, small stones.
UZB*: Urban land.						
Edom	Moderate: too clayey.	Severe: low strength.	Moderate: low strength.	Severe: low strength.	Severe: low strength.	Moderate: too clayey.
UZD*: Urban land.						
Edom	Severe: slope.	Severe: slope, low strength.	Severe: slope.	Severe: slope, low strength.	Severe: slope, low strength.	Severe: slope.
VaC Vanderlip	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: too sandy.
VdD Vanderlip	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, large stones, too sandy.
WeB Weikert	Moderate: depth to rock.	Moderate: depth to rock, frost action.	Moderate: depth to rock.	Moderate: slope, depth to rock, frost action.	Moderate: depth to rock, frost action.	Moderate: small stones, droughty, depth to rock.
WeC Weikert	Moderate: depth to rock, slope.	Moderate: slope, depth to rock, frost action.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope, depth to rock, frost action.	Moderate: slope, small stones, droughty.
WeD Weikert	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
WhB Wharton	Moderate: wetness.	Severe: frost action.	Severe: wetness.	Severe: frost action.	Severe: frost action.	Slight.
WhC Wharton	Moderate: wetness, slope.	Severe: frost action.	Severe: wetness.	Severe: slope, frost action.	Severe: frost action.	Moderate: slope.
WvB Wharton Variant	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness, frost action.	Severe: frost action.	Moderate: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AbB Albrights	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Fair: small stones.
AbC Albrights	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Severe: wetness.	Fair: slope, small stones.
AcB Albrights	Severe: wetness, percs slowly.	Moderate: slope, large stones.	Severe: wetness.	Severe: wetness.	Fair: large stones.
AcD Albrights	Severe: slope, wetness, percs slowly.	Severe: slope, large stones.	Severe: wetness.	Severe: slope, wetness.	Poor: slope.
AnB Andover Variant	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
AoB Andover Variant	Severe: large stones, wetness, percs slowly.	Severe: large stones.	Severe: wetness, large stones.	Severe: wetness.	Poor: large stones, wetness.
Ba* Basher	Severe: floods, wetness.	Severe: floods, wetness, seepage.	Severe: floods, wetness, seepage.	Severe: floods, wetness, seepage.	Good.
BeB Bedington	Moderate: depth to rock.	Moderate: slope, seepage, small stones.	Severe: depth to rock.	Slight	Fair: thin layer, small stones.
BeC Bedington	Moderate: slope, depth to rock.	Severe: slope.	Severe: depth to rock.	Moderate: slope.	Fair: slope, thin layer, small stones.
BdD Bedington	Severe: slope.	Severe: slope.	Severe: depth to rock.	Severe: slope.	Poor: slope.
BkB Berks	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: small stones.
BkC Berks	Severe: depth to rock.	Severe: slope, seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: small stones.
BkD Berks	Severe: slope, depth to rock.	Severe: slope, seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, small stones.
BmC*: Berks	Severe: depth to rock.	Severe: slope, seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: small stones.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
BmC*:					
Weikert	Severe: depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: thin layer, small stones.
BmD*:					
Berks	Severe: slope, depth to rock.	Severe: slope, seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, small stones.
Weikert	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer, small stones.
BmF*:					
Berks	Severe: slope, depth to rock.	Severe: slope, seepage, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, small stones.
Weikert	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: slope, depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer, small stones.
BoB Blairton	Severe: wetness, percs slowly, depth to rock.	Severe: depth to rock, wetness.	Severe: wetness, depth to rock.	Severe: wetness.	Fair: thin layer.
BoC Blairton	Severe: wetness, percs slowly, depth to rock.	Severe: slope, depth to rock, wetness.	Severe: wetness, depth to rock.	Severe: wetness.	Fair: slope, thin layer.
BrB Brinkerton	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
BrC Brinkerton	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
BuB Buchanan	Severe: wetness, percs slowly.	Moderate: slope, small stones.	Severe: wetness.	Severe: wetness.	Fair: small stones, thin layer.
BuC Buchanan	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Severe: wetness.	Fair: slope, small stones, thin layer.
BxB Buchanan	Severe: wetness, large stones, percs slowly.	Severe: large stones.	Severe: wetness, large stones.	Severe: wetness.	Poor: large stones.
BxD Buchanan	Severe: slope, wetness, large stones.	Severe: slope, large stones.	Severe: wetness, large stones.	Severe: slope, wetness.	Poor: slope, large stones.
CaB Cavode	Severe: percs slowly, wetness.	Moderate: slope, depth to rock.	Severe: wetness.	Severe: wetness.	Fair: too clayey, thin layer.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
CbB---------- Clarksburg	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Fair: thin layer.
CbC---------- Clarksburg	Severe: percs slowly, wetness.	Severe: slope.	Severe: wetness.	Severe: wetness.	Fair: slope, thin layer.
CvB---------- Clymer	Moderate: depth to rock.	Moderate: slope, seepage, depth to rock.	Severe: seepage, depth to rock.	Slight----------	Good.
CyB---------- Clymer	Moderate: large stones, depth to rock.	Moderate: slope, seepage, depth to rock.	Severe: seepage, depth to rock.	Slight----------	Fair: large stones.
CyD---------- Clymer	Severe: slope.	Severe: slope.	Severe: seepage, depth to rock.	Severe: slope.	Poor: slope.
DR*: Dystrochrepts. Rubble land.					
EdB---------- Edom	Severe: percs slowly.	Moderate: slope, depth to rock, seepage.	Severe: too clayey, depth to rock.	Slight----------	Poor: too clayey.
EdC---------- Edom	Severe: percs slowly.	Severe: slope.	Severe: too clayey, depth to rock.	Moderate: slope.	Poor: too clayey.
EdD---------- Edom	Severe: slope, percs slowly.	Severe: slope.	Severe: too clayey, depth to rock.	Severe: slope.	Poor: slope, too clayey.
EmB*: Edom----------	Severe: percs slowly.	Moderate: slope, depth to rock, seepage.	Severe: too clayey, depth to rock.	Slight----------	Poor: too clayey.
Weikert----------	Severe: depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: thin layer, small stones.
EmC*: Edom----------	Severe: percs slowly.	Severe: slope.	Severe: too clayey, depth to rock.	Moderate: slope.	Poor: too clayey.
Weikert----------	Severe: depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: thin layer, small stones.
EmD*: Edom----------	Severe: slope, percs slowly.	Severe: slope.	Severe: too clayey, depth to rock.	Severe: slope.	Poor: slope, too clayey.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
EmD*: Weikert	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer, small stones.
ErB Ernest	Severe: percs slowly, wetness.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Fair: thin layer.
ErC Ernest	Severe: percs slowly, wetness.	Severe: slope.	Moderate: wetness.	Moderate: slope, wetness.	Fair: slope, thin layer.
GpB Gilpin	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Fair: small stones.
GpC Gilpin	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Fair: small stones, slope.
GpD Gilpin	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: slope.	Poor: slope.
HeB*: Hagerstown	Moderate: depth to rock.	Moderate: slope, seepage, depth to rock.	Severe: depth to rock, too clayey.	Slight	Poor: too clayey.
Rock outcrop.					
HeD*: Hagerstown	Severe: slope.	Severe: slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: slope, too clayey.
Rock outcrop.					
HgB Hazleton	Moderate: depth to rock.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones, thin layer.
HgC Hazleton	Moderate: slope, depth to rock.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Fair: slope, small stones, thin layer.
HhB Hazleton	Moderate: depth to rock, large stones.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones, large stones.
HhC Hazleton	Moderate: slope, depth to rock, large stones.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Fair: slope, large stones.
HhF Hazleton	Severe: slope.	Severe: slope, seepage.	Severe: slope, seepage.	Severe: slope, seepage.	Poor: slope.
Ho Holly	Severe: floods, wetness, percs slowly.	Severe: floods, wetness, seepage.	Severe: floods, wetness, seepage.	Severe: floods, wetness, seepage.	Poor: wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
HuB---- Hublersburg	Slight	Moderate: slope, seepage.	Slight	Slight	Fair: too clayey.
HuC---- Hublersburg	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.	Fair: slope, too clayey.
HxB2---- Hublersburg	Slight	Moderate: slope, seepage.	Slight	Slight	Fair: too clayey.
HxC2---- Hublersburg	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.	Fair: slope, too clayey.
HxD2---- Hublersburg	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Poor: slope.
LaB---- Laidig	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness.	Moderate: wetness.	Fair: small stones.
LaC---- Laidig	Severe: percs slowly, wetness.	Severe: slope.	Severe: wetness.	Moderate: slope, wetness.	Fair: slope, small stones.
LaD---- Laidig	Severe: slope, percs slowly, wetness.	Severe: slope.	Severe: wetness.	Severe: slope.	Poor: slope.
LeB---- Laidig	Severe: percs slowly, wetness, large stones.	Severe: large stones.	Severe: large stones, wetness.	Moderate: wetness.	Poor: large stones.
LeD---- Laidig	Severe: slope, percs slowly, wetness.	Severe: slope, large stones.	Severe: large stones, wetness.	Severe: slope.	Poor: slope, large stones.
LeF---- Laidig	Severe: slope, percs slowly, wetness.	Severe: slope, large stones.	Severe: slope, large stones, wetness.	Severe: slope.	Poor: slope, large stones.
LkB---- Leck Kill	Moderate: depth to rock.	Severe: seepage.	Severe: depth to rock, seepage.	Severe: seepage.	Fair: thin layer, small stones.
LkC---- Leck Kill	Moderate: slope, depth to rock.	Severe: slope, seepage.	Severe: depth to rock, seepage.	Severe: seepage.	Fair: slope, thin layer, small stones.
LkD---- Leck Kill	Severe: slope.	Severe: slope, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope.
LLF---- Leck Kill	Severe: slope.	Severe: slope, seepage.	Severe: slope, depth to rock, seepage.	Severe: slope, seepage.	Poor: slope.
LmB---- Leetonia	Moderate: depth to rock.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
LnD---------- Lehew	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, small stones.
LnF---------- Lehew	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: slope, depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, small stones.
Lo*---------- Linden	Severe: floods, wetness.	Severe: floods, seepage.	Severe: wetness, floods, seepage.	Severe: seepage, floods.	Good.
Lp---------- Lobdell	Severe: floods, wetness.	Severe: floods, wetness, seepage.	Severe: floods, wetness, seepage.	Severe: floods, wetness, seepage.	Fair: wetness.
MeB---------- Meckesville	Severe: percs slowly, wetness.	Moderate: slope, small stones.	Severe: wetness.	Moderate: wetness.	Fair: small stones.
MeC---------- Meckesville	Severe: percs slowly, wetness.	Severe: slope.	Severe: wetness.	Moderate: slope, wetness.	Fair: slope, small stones.
MkB---------- Meckesville	Severe: percs slowly, wetness.	Moderate: large stones.	Severe: wetness.	Moderate: wetness.	Fair: large stones.
MkD---------- Meckesville	Severe: slope, percs slowly, wetness.	Severe: slope.	Severe: wetness.	Severe: slope.	Poor: slope.
MnB---------- Mertz	Severe: percs slowly.	Moderate: slope, small stones.	Moderate: too clayey.	Slight----------	Poor: small stones.
MnC---------- Mertz	Severe: percs slowly.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Poor: small stones.
MnD---------- Mertz	Severe: slope, percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Severe: slope.	Poor: slope, small stones.
MoB---------- Monongahela	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Fair: thin layer.
MrB---------- Morrison	Slight----------	Severe: seepage.	Severe: seepage.	Severe: seepage.	Good.
MrC---------- Morrison	Moderate: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Fair: slope.
MrD---------- Morrison	Severe: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: slope, seepage.	Poor: slope.
MsB---------- Morrison	Moderate: large stones.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: large stones.
MsD---------- Morrison	Severe: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: slope, seepage.	Poor: slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
MsF---------- Morrison	Severe: slope.	Severe: slope, seepage.	Severe: slope, seepage.	Severe: slope, seepage.	Poor: slope.
MuB---------- Murrill	Slight----------	Moderate: slope, seepage.	Moderate: too clayey.	Slight----------	Fair: small stones.
MuC---------- Murrill	Moderate: slope.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Fair: slope, small stones.
MuD---------- Murrill	Severe: slope.	Severe: slope.	Moderate: slope, too clayey.	Severe: slope.	Poor: slope.
MxB---------- Murrill	Severe: large stones.	Severe: large stones.	Severe: large stones.	Slight----------	Poor: large stones.
MxD---------- Murrill	Severe: large stones, slope.	Severe: slope, large stones.	Severe: large stones.	Severe: slope.	Poor: slope, large stones.
OuC---------- Opequon	Severe: depth to rock, percs slowly.	Severe: slope, depth to rock.	Severe: depth to rock.	Moderate: slope.	Poor: thin layer, too clayey.
OuD---------- Opequon	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Poor: slope, thin layer, too clayey.
OxF*:					
Opequon----------	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Poor: slope, thin layer, too clayey.
Hagerstown---------	Severe: slope.	Severe: slope.	Severe: slope, depth to rock, too clayey.	Severe: slope.	Poor: slope, too clayey.
Rock outcrop.					
Pt*:					
Pits.					
Dumps.					
Pu---------- Purdy	Severe: wetness, percs slowly.	Slight----------	Severe: wetness, too clayey.	Severe: wetness.	Poor: wetness, too clayey.
Qu*:					
Quarries.					
Dumps.					
Ty---------- Tyler	Severe: percs slowly, wetness.	Slight----------	Severe: wetness.	Severe: wetness.	Fair: thin layer.
UD*:					
Udifluvents.					
Dystrochrepts.					

See footnote at the end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
US*. Udorthents					
Ux*. Urban land					
UYB*: Urban land.					
Berks	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: small stones.
UYD*: Urban land.					
Berks	Severe: slope, depth to rock.	Severe: slope, seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, small stones.
UZB*: Urban land.					
Edom	Severe: percs slowly.	Moderate: slope, depth to rock, seepage.	Severe: too clayey, depth to rock.	Slight	Poor: too clayey.
UZD*: Urban land.					
Edom	Severe: slope, percs slowly.	Severe: slope.	Severe: too clayey, depth to rock.	Severe: slope.	Poor: slope, too clayey.
VaC Vanderlip	Moderate: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Fair: slope, too sandy.
VdD Vanderlip	Severe: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: slope, seepage.	Severe: slope.
WeB Weikert	Severe: depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: thin layer, small stones.
WeC Weikert	Severe: depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: thin layer, small stones.
WeD Weikert	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer, small stones.
WhB Wharton	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness, depth to rock.	Severe: wetness.	Fair: too clayey.
WhC Wharton	Severe: percs slowly, wetness.	Severe: slope.	Severe: wetness, depth to rock.	Severe: wetness.	Fair: slope, too clayey.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
WvB---------- Wharton Variant	Severe: percs slowly, wetness.	Moderate: slope, depth to rock.	Severe: wetness, depth to rock.	Severe: wetness.	Fair: thin layer, too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and "poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AbB, AbC---------- Albrights	Fair: frost action, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
AcB---------- Albrights	Fair: frost action, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones.
AcD---------- Albrights	Fair: slope, frost action, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, large stones.
AnB---------- Andover Variant	Poor: wetness, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
AoB---------- Andover Variant	Poor: wetness, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, large stones.
Ba*---------- Basher	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
BeB, BeC---------- Bedington	Fair: frost action, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
BdD---------- Bedington	Fair: slope, frost action, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, large stones.
BkB, BkC---------- Berks	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
BkD---------- Berks	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
BmC*:				
Berks----------	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
Weikert----------	Poor: depth to rock.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones, thin layer.
BmD*:				
Berks----------	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
Weikert----------	Poor: depth to rock.	Unsuited: excess fines.	Poor: excess fines.	Poor: slope, small stones, thin layer.
BmF*:				
Berks----------	Poor: slope, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
BmF*: Weikert	Poor: slope, depth to rock.	Unsuited: excess fines.	Poor: excess fines.	Poor: slope, small stones, thin layer.
BoB Blairton	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: small stones, thin layer.
BoC Blairton	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope, small stones.
BrB, BrC Brinkerton	Poor: wetness, frost action, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
BuB, BuC Buchanan	Fair: frost action, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
BxB Buchanan	Fair: wetness, large stones, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones.
BxD Buchanan	Fair: slope, wetness, large stones.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, large stones.
CaB Cavode	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
CbB Clarksburg	Fair: frost action, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
CbC Clarksburg	Fair: frost action, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope, thin layer.
CvB Clymer	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
CyB Clymer	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones.
CyD Clymer	Fair: slope, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, large stones.
DR*: Dystrochrepts. Rubble land.				
EdB Edom	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
EdC Edom	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope, too clayey.
EdD Edom	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
EmB*:				
Edom	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
Weikert	Poor: depth to rock.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones, thin layer.
EmC*:				
Edom	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope, too clayey.
Weikert	Poor: depth to rock.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones, thin layer.
EmD*:				
Edom	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Weikert	Poor: depth to rock.	Unsuited: excess fines.	Poor: excess fines.	Poor: slope, small stones, thin layer.
ErB Ernest	Fair: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer, small stones.
ErC Ernest	Fair: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope, thin layer.
GpB, GpC Gilpin	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
GpD Gilpin	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
HeB*:				
Hagerstown	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Rock outcrop.				
HeD*:				
Hagerstown	Poor: slope, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Rock outcrop.				
HgB, HgC Hazleton	Fair: frost action.	Poor: excess fines.	Poor: excess fines.	Poor: small stones.
HhB, HhC Hazleton	Fair: frost action.	Poor: excess fines, large stones.	Poor: excess fines, large stones.	Poor: large stones, small stones.
HhF Hazleton	Severe: slope.	Poor: excess fines, large stones.	Poor: excess fines, large stones.	Poor: slope, large stones, small stones.
Ho Holly	Poor: wetness.	Poor: excess fines.	Poor: excess fines.	Poor: wetness.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
HuB, HuC, HxB2, HxC2-- Hublersburg	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
HxD2---------- Hublersburg	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
LaB, LaC---------- Laidig	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
LaD---------- Laidig	Fair: slope, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
LeB---------- Laidig	Fair: large stones, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones, small stones.
LeD---------- Laidig	Fair: large stones, slope, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, large stones, small stones.
LeF---------- Laidig	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, large stones, small stones.
LkB, LkC---------- Leck Kill	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
LkD---------- Leck Kill	Fair: frost action, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
LLF---------- Leck Kill	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
LmB---------- Leetonia	Good----------	Fair: excess fines.	Fair: excess fines.	Poor: too sandy, small stones.
LnD---------- Lehew	Poor: thin layer.	Poor: excess fines.	Poor: excess fines.	Poor: slope, large stones, small stones.
LnF---------- Lehew	Poor: slope, thin layer.	Poor: excess fines.	Poor: excess fines.	Poor: slope, large stones, small stones.
Lo*---------- Linden	Fair: low strength, frost action.	Poor: excess fines.	Poor: excess fines.	Good.
Lp---------- Lobdell	Fair: low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
MeB, MeC---------- Meckesville	Fair: frost action, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
MkB---------- Meckesville	Fair: frost action, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
MkD---------- Meckesville	Fair: slope, frost action, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, large stones.
MnB, MnC---------- Mertz	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
MnD---------- Mertz	Fair: slope, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
MoB---------- Monongahela	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
MrB---------- Morrison	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
MrC---------- Morrison	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope, thin layer.
MrD---------- Morrison	Fair: slope, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
MsB---------- Morrison	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones.
MsD---------- Morrison	Fair: frost action, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, large stones.
MsF---------- Morrison	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, large stones.
MuB, MuC---------- Murrill	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
MuD---------- Murrill	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
MxB---------- Murrill	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones.
MxD---------- Murrill	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, large stones.
OuC---------- Opequon	Poor: low strength, depth to rock.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
OuD---------- Opequon	Poor: low strength, depth to rock.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, too clayey.
OxF*: Opequon----------	Poor: slope, low strength, depth to rock.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, too clayey.
Hagerstown----------	Poor: slope, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Rock outcrop.				

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Pt*: Pits. Dumps.				
Pu---------- Purdy	Poor: low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Qu*: Quarries. Dumps.				
Ty---------- Tyler	Poor: low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: area reclaim.
UD*: Udifluvents. Dystrochrepts.				
US*. Udorthents				
Ux*. Urban land				
UYB*: Urban land.				
Berks---------- 	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
UYD*: Urban land.				
Berks---------- 	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
UZB*: Urban land.				
Edom---------- 	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
UZD*: Urban land.				
Edom---------- 	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
VaC---------- Vanderlip	Good----------	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
VdD---------- Vanderlip	Fair: slope.	Fair: excess fines.	Unsuited: excess fines.	Poor: slope, too sandy, large stones.
WeB, WeC---------- Weikert	Poor: depth to rock.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones, thin layer.
WeD---------- Weikert	Poor: depth to rock.	Unsuited: excess fines.	Poor: excess fines.	Poor: slope, small stones, thin layer.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
WhB---------- Wharton	Poor: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
WhC---------- Wharton	Poor: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope, thin layer.
WvB---------- Wharton Variant	Poor: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. Absence of an entry indicates that the soil was not evaluated]

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
AbB, AbC---------- Albrights	Slope----------	Piping, low strength.	Deep to water	Percs slowly, wetness.	Slope, percs slowly.	Percs slowly, wetness.
AcB, AcD---------- Albrights	Slope----------	Large stones, piping, low strength.	Deep to water, large stones.	Percs slowly, wetness.	Slope, large stones, percs slowly.	Percs slowly, wetness, large stones.
AnB---------- Andover Variant	Slope----------	Piping, low strength.	Favorable------	Wetness, percs slowly.	Percs slowly, erodes easily, wetness.	Percs slowly, wetness, erodes easily.
AoB---------- Andover Variant	Slope----------	Piping, low strength, large stones.	Large stones---	Wetness, percs slowly.	Percs slowly, erodes easily, wetness.	Large stones, wetness, erodes easily.
Ba*---------- Basher	Seepage--------	Piping, seepage.	Deep to water	Floods, wetness.	Not needed-----	Erodes easily.
BeB, BeC---------- Bedington	Seepage, slope.	Low strength, compressible, piping.	No water-------	Not needed-----	Slope, small stones.	Slope.
BdD---------- Bedington	Slope, seepage.	Low strength, compressible, piping.	No water-------	Not needed-----	Large stones, slope.	Large stones, slope.
BkB, BkC, BkD----- Berks	Depth to rock, seepage.	Seepage, thin layer, piping.	No water-------	Not needed-----	Depth to rock, slope, small stones.	Depth to rock, droughty, slope.
BmC*, BmD*, BmF*: Berks----------	Depth to rock, seepage.	Seepage, thin layer, piping.	No water-------	Not needed-----	Depth to rock, slope, small stones.	Depth to rock, droughty, slope.
Weikert----------	Seepage, slope, depth to rock.	Thin layer, low strength, seepage.	No water-------	Not needed-----	Depth to rock, rooting depth, slope.	Depth to rock, rooting depth, droughty.
BoB, BoC---------- Blairton	Depth to rock	Piping---------	Slow refill----	Depth to rock, percs slowly, wetness.	Depth to rock, percs slowly, wetness.	Rooting depth, percs slowly, wetness.
BrB, BrC---------- Brinkerton	Slope----------	Piping, low strength.	Favorable------	Wetness, percs slowly.	Percs slowly, erodes easily, wetness.	Percs slowly, wetness, erodes easily.
BuB, BuC---------- Buchanan	Slope----------	Piping, low strength.	Deep to water	Percs slowly, slope.	Slope, percs slowly.	Slope, wetness.
BxB, BxD---------- Buchanan	Slope----------	Large stones, piping, low strength.	Deep to water, large stones.	Percs slowly, slope.	Slope, large stones, percs slowly.	Slope, large stones.
CaB---------- Cavode	Slope, depth to rock.	Low strength---	Deep to water	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
CbB, CbC---------- Clarksburg	Slope----------	Low strength---	Deep to water	Slope, percs slowly, wetness.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
CvB---------- Clymer	Slope, depth to rock, seepage.	Piping---------	No water-------	Not needed-----	Slope, small stones.	Slope.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
CyB, CyD---------- Clymer	Depth to rock, large stones, slope.	Piping, large stones.	No water-------	Not needed-----	Large stones, slope.	Large stones, slope.
DR*: Dystrochrepts.						
Rubble land.						
EdB, EdC, EdD----- Edom	Slope----------	Low strength, compressible.	No water-------	Not needed-----	Erodes easily, slope.	Erodes easily, slope.
EmB*, EmC*, EmD*: Edom----------	Slope----------	Low strength, compressible.	No water-------	Not needed-----	Erodes easily, slope.	Erodes easily, slope.
Weikert----------	Seepage, slope, depth to rock.	Thin layer, low strength, seepage.	No water-------	Not needed-----	Depth to rock, rooting depth, slope.	Depth to rock, rooting depth, droughty.
ErB, ErC---------- Ernest	Slope----------	Low strength---	Deep to water	Slope, percs slowly, wetness.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
GpB, GpC, GpD----- Gilpin	Slope, depth to rock, seepage.	Thin layer-----	No water-------	Not needed-----	Slope, depth to rock.	Slope, depth to rock.
HeB*, HeD*: Hagerstown-------	Seepage, slope.	Compressible, hard to pack.	No water-------	Not needed-----	Favorable------	Favorable.
Rock outcrop.						
HgB, HgC---------- Hazleton	Slope, depth to rock, seepage.	Low strength, piping.	No water-------	Not needed-----	Slope, depth to rock.	Slope.
HhB, HhC, HhF----- Hazleton	Slope, seepage.	Low strength, piping, large stones.	No water-------	Not needed-----	Slope, large stones.	Slope, large stones.
Ho---------- Holly	Seepage--------	Piping, wetness.	Slow refill----	Floods, frost action, poor outlets.	Wetness--------	Wetness.
HuB, HuC, HxB2, HxC2, HxD2------- Hublersburg	Slope----------	Low strength, hard to pack, compressible.	No water-------	Not needed-----	Slope, erodes easily.	Slope, erodes easily.
LaB, LaC, LaD----- Laidig	Slope, seepage.	Favorable------	No water-------	Not needed-----	Slope, rooting depth.	Slope, rooting depth.
LeB, LeD, LeF----- Laidig	Seepage, slope.	Large stones.	No water, large stones.	Not needed-----	Large stones, slope, rooting depth.	Large stones, slope, rooting depth.
LkB, LkC, LkD, LLF---------- Leck Kill	Seepage, slope.	Low strength, compressible, piping.	No water-------	Not needed-----	Slope----------	Slope.
LmB---------- Leetonia	Seepage, slope.	Seepage--------	No water-------	Not needed-----	Too sandy, piping, slope.	Droughty, slope.
LnD, LnF---------- Lehew	Depth to rock, seepage, slope.	Piping, seepage, large stones.	No water, large stones.	Not needed-----	Depth to rock, large stones.	Droughty, depth to rock, large stones.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
Lo*---------- Linden	Seepage--------	Seepage, piping.	No water-------	Not needed-----	Not needed-----	Favorable.
Lp---------- Lobdell	Seepage--------	Piping, wetness, seepage.	Deep to water, slow refill.	Floods, frost action.	Wetness, erodes easily.	Erodes easily.
MeB, MeC---------- Meckesville	Slope----------	Piping---------	No water-------	Not needed-----	Slope----------	Slope.
MkB, MkD---------- Meckesville	Slope, large stones.	Large stones, piping.	No water-------	Not needed-----	Large stones, slope.	Slope, large stones.
MnB, MnC, MnD----- Mertz	Slope----------	Compressible, hard to pack, piping.	No water-------	Not needed-----	Slope, piping.	Slope.
MoB---------- Monongahela	Slope, seepage.	Low strength, piping.	Deep to water	Slope, percs slowly.	Percs slowly, piping, rooting depth.	Slope, percs slowly, erodes easily.
MrB, MrC, MrD----- Morrison	Seepage--------	Piping, seepage.	No water-------	Not needed-----	Slope, erodes easily.	Slope, erodes easily.
MsB, MsD, MsF----- Morrison	Seepage--------	Piping, seepage, large stones.	No water-------	Not needed-----	Slope, erodes easily, large stones.	Slope, erodes easily, large stones.
MuB, MuC, MuD----- Murrill	Slope----------	Piping, low strength.	No water-------	Not needed-----	Slope----------	Slope.
MxB, MxD---------- Murrill	Slope----------	Piping, low strength, large stones.	No water-------	Not needed-----	Large stones, slope.	Large stones, slope.
OuC, OuD---------- Opequon	Depth to rock, slope.	Thin layer, hard to pack.	No water-------	Not needed-----	Depth to rock, slope.	Slope, rooting depth, depth to rock.
OxF*: Opequon----------	Depth to rock, slope.	Thin layer, hard to pack.	No water-------	Not needed-----	Depth to rock, slope.	Slope, rooting depth, depth to rock.
Hagerstown-------	Seepage, slope.	Compressible, hard to pack.	No water-------	Not needed-----	Favorable------	Favorable.
Rock outcrop.						
Pt*: Pits.						
Dumps.						
Pu---------- Purdy	Favorable------	Low strength, compressible.	Slow refill----	Percs slowly, frost action, wetness.	Wetness--------	Wetness.
Qu*: Quarries.						
Dumps.						
Ty---------- Tyler	Favorable------	Wetness, piping.	Slow refill----	Percs slowly, frost action, wetness.	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.
UD*: Udifluvents.						

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
UD*: Dystrochrepts.						
US*. Udorthents						
Ux*. Urban land						
UYB*, UYD*: Urban land.						
Berks	Depth to rock, seepage.	Seepage, thin layer, piping.	No water	Not needed	Depth to rock, slope, small stones.	Depth to rock, droughty, slope.
UZB*, UZD*: Urban land.						
Edom	Slope	Low strength, compressible.	No water	Not needed	Erodes easily, slope.	Erodes easily, slope.
VaC Vanderlip	Seepage, slope.	Piping, seepage.	No water	Not needed	Piping, slope.	Droughty, slope.
VdD Vanderlip	Seepage, slope.	Piping, seepage.	No water	Not needed	Piping, slope, large stones.	Droughty, slope, large stones.
WeB, WeC, WeD Weikert	Seepage, slope, depth to rock.	Thin layer, low strength, seepage.	No water	Not needed	Depth to rock, rooting depth, slope.	Depth to rock, rooting depth, droughty.
WhB, WhC Wharton	Slope	Low strength, hard to pack.	Deep to water	Slope, percs slowly, frost action.	Slope, percs slowly, erodes easily.	Slope, percs slowly, erodes easily.
WvB Wharton Variant	Slope	Low strength	Slow refill	Wetness, percs slowly, frost action.	Slope, percs slowly, wetness.	Percs slowly, wetness, rooting depth.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
AbB, AbC---------- Albrights	0-10	Gravelly silt loam.	ML, CL	A-4	0-15	65-90	60-85	55-80	50-70	---	---
	10-22	Channery clay loam, gravelly silt loam, silty clay loam.	ML, CL, SM, SC	A-4, A-6	0-15	80-100	65-95	60-90	40-85	25-40	3-15
	22-60	Silt loam, gravelly silty clay loam, channery clay loam.	CL, ML, SC, SM-SC	A-4, A-2, A-6	0-15	65-100	55-80	40-75	25-70	20-40	3-15
AcB, AcD---------- Albrights	0-10	Very stony silt loam.	ML, CL	A-4	3-15	65-100	60-90	55-85	50-80	---	---
	10-22	Channery clay loam, gravelly silt loam, silty clay loam.	ML, CL, SM, SC	A-4, A-6	0-15	80-100	65-95	60-90	40-85	25-40	3-15
	22-60	Silt loam, gravelly silty clay loam, channery clay loam.	CL, ML, SC, SM-SC	A-4, A-2, A-6	0-15	65-100	55-80	40-75	25-70	20-40	3-15
AnB---------- Andover Variant	0-8	Loam----------	ML, CL, SM, SC	A-4	0-5	85-100	80-95	60-90	35-85	---	---
	8-18	Loam, gravelly clay loam, cobbly sandy clay loam.	SM, SC, ML, CL	A-4, A-2	0-25	80-95	65-85	60-85	30-60	20-35	4-10
	18-50	Loam, gravelly clay loam, cobbly sandy clay loam.	SM, SC, ML, CL	A-2, A-4	0-25	80-95	65-85	60-85	30-60	20-35	2-10
	50-60	Gravelly sandy clay loam, cobbly loam, cobbly sandy loam.	SM, SC, ML, CL	A-2, A-4	5-30	70-95	55-90	50-75	25-60	20-35	2-10
AoB---------- Andover Variant	0-8	Extremely stony loam.	ML, CL, SM, SC	A-4, A-2	5-15	70-100	65-95	60-90	30-85	---	---
	8-18	Loam, gravelly clay loam, cobbly sandy clay loam.	SM, SC, ML, CL	A-4, A-2	0-25	80-95	65-85	60-80	30-60	20-35	4-10
	18-50	Loam, gravelly clay loam, cobbly sandy clay loam.	SM, SC, ML, CL	A-4, A-2	0-25	80-95	65-85	60-85	30-60	20-35	2-9
	50-60	Gravelly sandy clay loam, cobbly loam, cobbly sandy loam.	SM, SC, ML, CL	A-2, A-4	5-30	70-95	55-90	50-75	25-60	20-35	2-9

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Ba* Basher	0-7	Loam, silt loam, fine sandy loam	ML, CL-ML, SM, SM-SC	A-4, A-2	0-5	80-100	75-100	45-100	20-90	15-25	2-7
	7-35	Silt loam, loam, gravelly fine sandy loam.	SM, ML, CL-ML, SM-SC	A-4, A-2, A-1	0-5	75-100	70-100	40-100	20-90	15-25	2-7
	35-60	Silt loam, gravelly loam, fine sandy loam.	SM, ML, CL-ML, SM-SC	A-4, A-2, A-1	0-25	75-100	50-100	40-100	20-90	15-25	2-7
BeB, BeC Bedington	0-7	Channery silt loam.	GM, SM, ML, CL	A-2, A-4	0-10	50-85	50-80	40-75	30-65	---	---
	7-37	Silt loam, channery silty clay loam, very shaly loam.	GM, SM, ML, SM-SC	A-4, A-2, A-6, A-1	0-40	40-90	30-90	25-75	20-65	25-40	5-15
	37-63	Channery loam, very shaly silt loam, very channery silty clay loam.	SM, GM, SC, GC	A-4, A-2, A-1, A-6	0-40	40-85	20-80	15-75	15-45	20-40	1-14
BdD Bedington	0-7	Very stony silt loam.	GM, SM, ML, CL	A-4, A-2	3-10	50-100	50-100	40-95	30-95	---	---
	7-37	Silt loam, channery silty clay loam, very shaly loam.	GM, SM, ML, SM-SC	A-4, A-2, A-6, A-1	0-40	40-90	30-85	25-75	20-65	25-40	1-15
	37-63	Channery loam, very shaly silt loam, very channery silty clay loam.	SM, GM, SC, GC	A-4, A-2, A-1, A-6	0-40	40-85	20-80	15-75	15-45	20-40	1-14
BkB, BkC, BkD Berks	0-12	Channery silt loam.	GM, ML, GC, SC	A-2, A-4	0-30	50-90	45-85	40-60	30-55	25-36	5-10
	12-25	Channery loam, very channery loam, channery silt loam.	GM, SM, GC, SC	A-1, A-2, A-4	0-30	40-80	35-70	25-60	20-45	25-36	5-10
	25-29	Channery loam, very channery loam, channery silt loam.	GM, SM	A-1, A-2	0-40	35-65	25-55	20-40	15-35	24-38	2-10
	29	Weathered bedrock.	---	---	---	---	---	---	---	---	---
BmC*, BmD*, BmF*: Berks	0-12	Channery silt loam.	GM, ML, GC, SC	A-2, A-4	0-30	50-90	45-85	40-60	30-55	25-36	5-10
	12-25	Channery loam, very channery loam, channery silt loam.	GM, SM, GC, SC	A-1, A-2, A-4	0-30	40-80	35-70	25-60	20-45	25-36	5-10
	25-29	Channery loam, very channery loam, channery silt loam.	GM, SM	A-1, A-2	0-40	35-65	25-55	20-40	15-35	24-38	2-10
	29	Weathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
BmC*, BmD*, BmF*: Weikert	0-10	Channery silt loam.	GM, ML, SM	A-1, A-2, A-4	0-10	35-70	35-70	25-65	20-55	30-40	4-10
	10-14	Shaly loam, very shaly silt loam, channery loam.	GM, GP-GM	A-1, A-2	0-20	15-60	10-45	5-35	5-35	28-36	3-9
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
BoB---------- Blairton	0-12	Silt loam-------	ML	A-4	0	80-100	75-100	65-90	50-80	---	---
	12-34	Silt loam, channery silty clay loam, very shaly loam.	ML, CL, GM, SM	A-4, A-2, A-6, A-7	0-5	50-90	35-90	30-85	25-70	25-45	5-15
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
BoC---------- Blairton	0-12	Silt loam-------	ML	A-4	0	80-100	75-100	65-90	50-80	---	---
	12-34	Silt loam, channery silty clay loam, very shaly loam.	ML, CL, GM, SM	A-4, A-2, A-6, A-7	0-5	50-90	35-90	30-85	25-70	25-45	5-15
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
BrB, BrC---------- Brinkerton	0-10	Silt loam-------	ML	A-4, A-6	0-10	90-100	85-100	85-100	75-100	---	---
	10-21	Silty clay loam, silt loam.	ML	A-4, A-6, A-7	0-10	90-100	85-100	85-100	65-100	30-45	5-15
	21-40	Silt loam, shaly loam, channery silty clay loam.	ML	A-4, A-6, A-7	0-10	75-100	70-100	65-100	55-100	30-45	5-15
	40-60	Silt loam, shaly loam, channery silt loam.	ML, GM, SM	A-4, A-6, A-2	0-40	70-90	35-85	30-85	25-75	30-40	5-15
BuB, BuC---------- Buchanan	0-4	Gravelly silt loam.	SM, ML, CL	A-4, A-2	0-20	70-100	65-95	55-85	30-65	---	---
	4-21	Gravelly loam, silt loam, gravelly sandy clay loam.	GM, ML, CL, SM	A-4, A-2	0-20	65-100	60-90	50-40	20-80	20-35	NP-10
	21-60	Gravelly loam, loam, channery clay loam.	GM, ML, CL, SM	A-4, A-2, A-6	0-20	50-100	30-80	30-75	20-60	20-35	5-15
BxB, BxD---------- Buchanan	0-4	Extremely stony silt loam.	SM, ML, CL	A-2, A-4	5-20	70-85	65-95	55-85	30-60	---	---
	4-21	Gravelly loam, silt loam, gravelly sandy clay loam.	GM, ML, CL, SM	A-2, A-4	0-20	65-100	60-90	50-90	20-80	20-35	NP-10
	21-60	Gravelly loam, loam, channery clay loam.	GM, ML, CL, SM	A-2, A-4, A-6	0-20	50-100	30-80	30-75	20-60	20-35	5-15
CaB---------- Cavode	0-7	Silt loam-------	ML, CL	A-4	0-5	90-100	80-100	80-95	75-95	---	---
	7-39	Silty clay loam, silty clay, clay.	ML, CL, CL-ML	A-4, A-5, A-7, A-6	0-5	85-100	80-100	80-95	70-95	25-50	4-20
	39-62	Shaly silty clay loam, silty clay, clay.	ML, CL, GC, GM	A-2, A-7, A-4, A-6	0-5	55-100	50-100	40-80	25-75	25-45	2-15

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
CbB, CbC---------- Clarksburg	0-7	Silt loam-------	ML, CL	A-4	0-5	90-100	85-100	80-95	75-90	---	---
	7-20	Loam, channery silty clay loam, gravelly silt loam.	ML, CL, ML-CL	A-4, A-6, A-7, A-5	0-15	80-100	65-100	60-95	55-85	25-45	6-16
	20-50	Silty clay loam, channery loam, gravelly silt loam.	ML, CL, SM-SC, SC	A-4, A-6, A-7, A-5	0-15	75-100	55-100	50-95	45-90	20-50	4-20
	50-60	Clay, channery loam, silty clay loam.	CL, GM, CH, SM-SC	A-4, A-6, A-7, A-2	0-20	50-100	20-100	15-95	15-90	20-52	4-25
CvB---------- Clymer	0-7	Loam----------	ML, SM	A-4	0-5	85-100	75-95	60-90	35-85	---	---
	7-27	Sandy loam, channery loam, channery clay loam.	GM, SM, GC, ML	A-2, A-4	0-20	60-95	50-95	45-85	30-60	14-32	NP-9
	27-47	Channery loam, very channery loam, channery sandy loam.	GM, GP-GM, GC, SM	A-1, A-2, A-3, A-4	10-30	30-75	25-70	20-60	5-40	14-32	NP-9
	47	Weathered bedrock.	---	---	---	---	---	---	---	---	---
CyB, CyD---------- Clymer	0-7	Very stony sandy loam.	ML, SM, GM	A-4, A-2	3-30	60-100	50-95	45-90	30-85	---	---
	7-27	Sandy loam, channery loam, channery clay loam.	GM, SM, GC, ML	A-2, A-4	0-20	60-95	50-95	45-85	30-60	14-32	NP-9
	27-47	Channery loam, very channery loam, channery sandy loam.	GM, GP-GM, GC, SM	A-1, A-2, A-3, A-4	10-30	30-75	25-70	20-60	5-40	14-32	NP-9
	47	Weathered bedrock.	---	---	---	---	---	---	---	---	---
DR*: Dystrochrepts.											
Rubble land.											
EdB, EdC, EdD------ Edom	0-6	Silty clay loam	ML, CL	A-4, A-6	0	85-100	80-100	75-95	70-90	---	---
	6-24	Silty clay, channery clay, shaly silty clay loam.	MH, CH, ML, CL	A-7, A-6	0-10	70-95	65-95	65-95	55-90	35-55	12-30
	24-42	Shaly silty clay loam, channery silty clay, shaly clay.	GM, GC, ML, CL	A-7, A-6, A-2	5-20	25-80	20-70	15-60	15-55	35-49	10-20
	42	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
EmB*: Edom----------	0-6	Silty clay loam	ML, CL	A-4, A-6	0	85-100	80-100	75-95	70-90	---	---
	6-24	Silty clay, channery clay, shaly silty clay loam.	MH, CH, ML, CL	A-7, A-6	0-10	70-95	65-95	65-95	55-90	35-55	12-30
	24-42	Shaly silty clay loam, channery silty clay, shaly clay.	GM, GC, ML, CL	A-7, A-6, A-2	5-20	25-80	20-70	15-60	15-55	35-49	10-20
	42	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
EmB*:											
Weikert	0-10	Channery silt loam.	GM, ML, SM	A-1, A-2, A-4	0-10	35-70	35-70	25-65	20-55	30-40	4-10
	10-14	Shaly loam, very shaly silt loam, channery loam.	GM, GP-GM	A-1, A-2	0-20	15-60	10-45	5-35	5-35	28-36	3-9
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
EmC*, EmD*:											
Edom	0-6	Silty clay loam	ML, CL	A-4, A-6	0	85-100	80-100	75-95	70-90	---	---
	6-24	Silty clay, channery clay, shaly silty clay loam.	MH, CH, ML, CL	A-7, A-6	0-10	70-95	65-95	65-95	55-90	35-55	12-30
	24-42	Shaly silty clay loam, channery silty clay, shaly clay.	GM, GC, ML, CL	A-7, A-6, A-2	5-20	25-80	20-70	15-60	15-55	35-49	10-20
	42	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Weikert	0-10	Channery silt loam.	GM, ML, SM	A-1, A-2, A-4	0-10	35-70	35-70	25-65	20-55	30-40	4-10
	10-14	Shaly loam, very shaly silt loam, channery loam.	GM, GP-GM	A-1, A-2	0-20	15-60	10-45	5-35	5-35	28-36	3-9
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
ErB, ErC	0-9	Silt loam	ML, CL	A-4, A-6	0-15	85-100	80-100	70-95	60-95	25-40	2-15
Ernest	9-27	Silty clay loam, silt loam, channery silt loam.	ML, CL	A-4, A-5, A-6, A-7	0-15	75-95	70-95	65-90	55-90	25-50	2-25
	27-48	Channery silt loam, channery loam, silty clay loam.	ML, CL, GM, SM	A-4, A-5, A-6, A-7	0-20	70-95	55-95	55-90	45-90	20-45	2-25
	48-60	Channery silt loam, silt loam, silty clay loam.	ML, CL, GM, SM	A-4, A-5, A-6, A-7	0-20	70-95	45-95	45-90	40-90	25-50	2-25
GpB, GpC, GpD	0-9	Channery silt loam.	GM, ML, CL, CL-ML	A-2, A-4, A-6	0-30	50-90	45-85	35-75	30-70	20-40	4-15
Gilpin	9-25	Channery loam, shaly silt loam, silty clay loam.	GM, ML, CL, CL-ML	A-2, A-4, A-6	0-30	50-95	45-90	35-85	30-80	20-40	4-15
	25-31	Channery loam, very channery silt loam.	GM, GC, GM-GC	A-1, A-2, A-4, A-6	0-35	25-55	20-50	15-45	15-40	20-40	4-15
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
HeB*, HeD*:											
Hagerstown--------	0-8	Silt loam-------	ML, CL, CL-ML	A-4, A-6, A-7, A-5	0-15	85-100	80-100	80-100	70-95	25-50	5-25
	8-41	Clay, clay loam, loam.	CL, CH	A-7	0-5	90-100	80-100	75-100	55-95	40-65	26-34
	41-60	Clay, silty clay, silty clay loam.	CH, CL	A-7, A-6	0-5	85-100	80-100	75-100	75-95	30-70	15-40
Rock outcrop.											
HgB, HgC----------	0-6	Channery sandy loam.	ML, GM, SM	A-2, A-4	0-15	60-95	60-95	60-75	35-55	---	---
Hazleton	6-49	Channery sandy loam, loam, very channery loam.	GM, SM, ML, SC	A-2, A-4, A-1	0-50	60-95	45-90	35-70	20-55	<30	NP-8
	49-60	Channery loam, very channery sandy loam, very channery loamy sand.	GM, SM, SC, GC	A-2, A-1, A-4	0-60	55-80	35-75	25-65	15-50	<30	NP-8
HhB, HhC, HhF------	0-6	Very stony sandy loam.	ML, GM, SM	A-4, A-2	5-15	60-85	50-80	50-70	35-55	---	---
Hazleton	6-49	Channery sandy loam, channery loam, loam.	GM, SM, ML, SC	A-2, A-4, A-1	0-50	60-95	45-90	35-70	20-55	<30	NP-8
	49-60	Channery loam, very channery sandy loam, very channery loamy sand.	GM, SM, SC, GC	A-2, A-1, A-4	5-60	55-80	35-75	25-65	15-50	<30	NP-8
Ho----------	0-6	Silt loam-------	ML	A-4	0	90-100	85-100	80-100	70-90	25-35	NP-10
Holly	6-43	Silt loam, loam, silty clay loam.	ML, SM, CL, SC	A-4, A-6	0	85-100	80-100	75-95	45-85	20-40	NP-14
	43-60	Stratified silt loam to gravelly sand.	ML, SM, GM	A-4	0-25	70-100	65-100	55-90	35-70	20-40	NP-10
HuB, HuC, HxB2, HxC2, HxD2--------	0-10	Cherty silt loam	ML, CL	A-4, A-6	0-5	75-90	70-85	70-85	55-75	---	---
Hublersburg	10-60	Cherty silt loam, silty clay loam, clay.	CL, CH	A-7, A-6	0-5	85-100	60-95	55-95	55-85	35-55	12-30
LaB, LaC, LaD------	0-6	Channery loam---	GM, SM, ML, CL-ML	A-4	0-5	65-90	55-80	50-80	35-70	15-30	1-10
Laidig	6-32	Channery loam, channery silt clay loam, channery silt loam.	SM, SC, CL-ML, CL	A-2, A-4, A-6	5-30	70-95	55-90	40-80	20-70	15-40	2-18
	32-71	Channery sandy clay loam, channery loam, channery silt loam.	GC, SC, GM-GC, CL-ML	A-2, A-1, A-4, A-6	5-40	50-90	40-85	30-80	15-70	15-35	2-16

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
LeB, LeD, LeF------- Laidig	0-6	Extremely stony loam.	GM-GC, CL-ML, SM-SC, SM	A-4	10-30	70-100	65-100	55-95	45-75	15-30	NP-10
	6-32	Channery loam, channery sandy clay loam, channery sandy loam.	SM, SC, CL-ML, GM-GC	A-2, A-4, A-6	5-30	70-95	55-90	40-80	20-70	15-40	2-18
	32-71	Channery sandy clay loam, channery loam, channery sandy loam.	GC, GM-GC, CL-ML, SC	A-2, A-1, A-4, A-6	5-40	50-90	40-85	30-80	15-70	15-35	2-16
LkB, LkC, LkD, LLF- Leck Kill	0-12	Channery silt loam.	SM, ML, GM	A-4	0-5	70-85	60-80	50-80	35-70	---	---
	12-38	Silt loam, channery loam, shaly silty clay loam.	GM, SC, GC, CL	A-4, A-2, A-6	0-10	60-90	50-85	40-80	30-70	23-40	2-17
	38-45	Very channery silt loam, very channery clay loam, very shaly loam.	SM, GM, GP-GM	A-2, A-1	0-30	30-70	10-30	8-30	6-25	25-40	2-13
	45	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
LmB---------- Leetonia	0-41	Flaggy loamy sand.	GW, GM, SW, SM	A-1, A-2	15-50	45-85	35-70	20-55	2-20	10-30	NP
	41-60	Very gravelly sand, very gravelly loamy sand.	GW, GM, SW, SM	A-1	10-30	45-65	35-60	20-35	2-15	10-30	NP
LnD, LnF---------- Lehew	0-5	Very stony loam	SM, GM, ML, CL-ML	A-2, A-4	5-25	50-90	45-80	40-75	20-55	15-30	NP-7
	5-17	Very channery sandy loam, channery fine sandy loam, channery loam.	SM, GM, GM-GC	A-2, A-4 A-1	5-20	45-75	30-65	20-55	10-40	15-30	NP-7
	17-26	Very channery sandy loam, very channery fine sandy loam, channery loam.	SM, GM, GM-GC	A-2, A-4 A-1	10-50	45-75	30-65	20-55	10-40	15-30	NP-7
	26	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Lo*---------- Linden	0-30	Loam----------	ML, SM	A-4	0	80-100	80-100	65-100	40-90	---	---
	30-45	Silt loam, gravelly loam, sandy loam.	ML, SM	A-4, A-2	0-5	80-100	65-100	40-95	25-90	<30	NP-3
	45-60	Loam, gravelly sandy loam, very gravelly sand.	SM, GM, GP, ML	A-2, A-1, A-3, A-4	0-20	40-100	30-100	15-90	5-75	<25	NP-5
Lp---------- Lobdell	0-7	Silt loam-------	ML, CL-ML, CL	A-4	0	95-100	95-100	80-100	65-90	20-30	NP-8
	7-29	Loam, silt loam	ML	A-4	0	90-100	80-100	70-95	55-85	20-35	NP-10
	29-60	Stratified sandy loam to silt loam.	ML, SM, CL-ML, CL	A-4	0-10	90-100	65-100	60-85	40-80	15-35	NP-10

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
MeB, MeC---------- Meckesville	0-4	Gravelly silt loam.	ML	A-4	0-15	80-100	60-70	60-65	55-60	---	---
	4-29	Loam, channery silt loam, gravelly silty clay loam.	ML, CL-ML, CL	A-4, A-6	0-20	60-100	60-95	60-90	55-70	25-40	2-15
	29-60	Loam, channery silt loam, gravelly clay loam.	ML, CL-ML, GM, SC	A-4, A-2	0-20	45-95	40-90	35-85	30-65	20-30	2-10
MkB, MkD---------- Meckesville	0-4	Very stony silt loam.	ML	A-4	3-15	80-100	70-95	65-85	55-80	---	---
	4-29	Loam, channery silt loam, gravelly silty clay loam.	ML, CL, CL-ML	A-4, A-6	0-20	60-100	60-95	60-90	55-70	25-40	2-15
	29-60	Loam, channery silt loam, gravelly clay loam.	ML, CL, GM, SC	A-4, A-2	0-20	45-95	40-90	35-85	30-65	20-30	2-10
MnB, MnC, MnD------ Mertz	0-21	Channery silt loam.	ML, GM, SM	A-4	5-10	60-95	45-85	45-85	40-75	---	---
	21-60	Cherty clay loam, very channery silty clay loam, cherty loam.	ML, CL, GM, SC	A-6, A-7, A-4	5-20	55-95	45-85	45-85	40-75	30-45	7-20
	60-80	Cherty clay loam, very channery loam, very cherty silty clay loam.	CL, GC, SC	A-6, A-7, A-2	5-50	55-80	30-75	30-70	25-55	30-45	10-20
MoB---------- Monongahela	0-6	Silt loam-------	ML, SM, CL-ML, SM-SC	A-4	0-5	90-100	85-100	75-100	45-90	20-35	1-10
	6-20	Loam, silt loam, clay loam.	ML, CL	A-4, A-6	0-15	90-100	80-100	75-100	70-90	20-40	5-15
	20-54	Loam, silt loam, sandy clay loam.	ML, CL, SM, SC	A-4, A-6	0-10	80-100	75-100	70-95	45-95	20-40	1-15
	54-86	Sandy loam, clay loam.	ML, CL, SM, SC	A-4, A-6	5-20	75-100	60-100	60-95	40-95	20-40	1-15
MrB, MrC, MrD------ Morrison	0-13	Sandy loam------	SM, ML	A-2, A-4	0-5	95-100	80-100	50-80	25-55	---	---
	13-45	Sandy loam, gravelly loam, channery sandy clay loam.	SM, ML, SC	A-2, A-4	0-10	80-100	60-100	55-80	25-55	<35	NP-10
	45-60	Sandy loam, gravelly loamy sand, channery sandy loam.	SM, SC	A-2, A-3, A-4	0-15	80-100	60-100	55-90	10-45	<25	NP-10

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
MsB, MsD, MsF------ Morrison	0-13	Very stony sandy loam.	SM, ML	A-2, A-4	3-10	80-100	80-100	60-80	25-55	---	---
	13-45	Sandy loam, gravelly loam, channery sandy clay loam.	SM, ML, SC	A-2, A-4	0-10	80-100	60-100	55-80	25-55	<35	NP-10
	45-60	Sandy loam, gravelly loamy sand, channery sandy loam.	SM, SC	A-2, A-3 A-4	0-15	80-100	60-100	55-90	10-45	<25	NP-10
MuB, MuC, MuD------ Murrill	0-11	Gravelly silt loam.	ML, GM, CL, SM-SC	A-4, A-6, A-2	0-5	65-80	55-70	45-65	30-65	20-40	5-15
	11-60	Channery silty clay loam, channery sandy clay loam, channery clay loam.	ML, CL, MH, CH	A-4, A-6, A-7	0-15	65-85	60-70	55-65	50-65	30-60	5-30
MxB, MxD---------- Murrill	0-11	Extremely stony silt loam.	CL, ML, GM, SM-SC	A-4, A-6, A-2	10-25	70-90	50-80	45-75	30-70	20-40	5-15
	11-60	Channery silty clay loam, channery sandy clay loam, channery clay loam.	ML, CL, MH, CH	A-4, A-6, A-7	0-15	65-85	60-70	55-65	55-65	30-60	5-30
OuC, OuD---------- Opequon	0-8	Silty clay loam	CL, MH, CH	A-6, A-7	0-5	85-100	80-100	80-100	75-95	35-70	15-40
	8-16	Silty clay loam, clay, silty clay.	CH, MH, CL	A-6, A-7	0-10	80-100	60-100	60-100	55-95	35-90	20-50
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
OxF*:											
Opequon----------	0-8	Silty clay loam	CL, MH, CH	A-6, A-7	0-5	85-100	80-100	80-100	75-95	35-70	15-40
	8-16	Silty clay loam, clay, silty clay.	CH, MH, CL	A-6, A-7	0-10	80-100	60-100	60-100	55-95	35-90	20-50
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hagerstown--------	0-8	Silty clay loam	ML, CL, CL-ML	A-4, A-6, A-7, A-5	0-15	85-100	80-100	80-100	70-95	25-50	5-25
	8-41	Clay, clay loam, loam.	CL, CH	A-7	0-5	90-100	80-100	75-100	55-95	40-65	26-34
	41-60	Clay, silty clay, silty clay loam.	CH, CL	A-7, A-6	0-5	85-100	80-100	75-100	75-95	30-70	15-40
Rock outcrop.											
Pt*:											
Pits.											
Dumps.											

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Pu---------- Purdy	0-9	Silt loam-------	ML, CL	A-4, A-6, A-7	0	95-100	90-100	90-100	90-100	25-50	2-25
	9-34	Silty clay, clay, clay loam.	ML, CL, CH	A-4, A-5 A-6, A-7	0	95-100	90-100	85-100	75-85	25-75	2-45
	34-60	Silty clay, clay loam, clay.	ML, CL, CH	A-4, A-5 A-6, A-7	0-15	85-100	60-100	55-100	50-95	25-75	2-45
Qu*: Quarries.											
Dumps.											
Ty---------- Tyler	0-7	Silt loam-------	ML	A-4	0	100	100	95-100	80-95	30-40	4-10
	7-20	Silty clay loam, silt loam.	CL	A-6, A-7, A-4, A-5	0	100	100	95-100	85-100	25-45	8-20
	20-48	Silty clay loam, silt loam, clay loam.	CL	A-6, A-7, A-4, A-5	0	100	100	80-100	70-95	25-45	8-20
	48-62	Stratified loam to silty clay loam.	CL, ML, CL-ML	A-6, A-4, A-7, A-5	0	95-100	90-100	75-100	60-90	20-45	4-18
UD*: Udifluvents.											
Dystrochrepts.											
US*. Udorthents											
Ux*. Urban land											
UYB*: Urban land.											
Berks---------- Berks	0-12	Channery silt loam.	GM, ML, GC, SC	A-2, A-4	0-30	50-90	45-85	40-60	30-55	25-36	5-10
	12-25	Channery loam, very channery loam, channery silt loam.	GM, SM, GC, SC	A-1, A-2, A-4	0-30	40-80	35-70	25-60	20-45	25-36	5-10
	25-29	Channery loam, very channery loam, channery silt loam.	GM, SM	A-1, A-2	0-40	35-65	25-55	20-40	15-35	24-38	2-10
	29	Weathered bedrock.	---	---	---	---	---	---	---	---	---
UYD*: Urban land.											

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
UYD*:											
Berks	0-12	Channery silt loam.	GM, ML, GC, SC	A-2, A-4	0-30	50-90	45-85	40-60	30-55	25-36	5-10
	12-25	Channery loam, very channery loam, channery silt loam.	GM, SM, GC, SC	A-1, A-2, A-4	0-30	40-80	35-70	25-60	20-45	25-36	5-10
	25-29	Channery loam, very channery loam, channery silt loam.	GM, SM	A-1, A-2	0-40	35-65	25-55	20-40	15-35	24-38	2-10
	29	Weathered bedrock.	---	---	---	---	---	---	---	---	---
UZB*, UZD*:											
Urban land.											
Edom	0-6	Silty clay loam	ML, CL	A-4, A-6	0	85-100	80-100	75-95	70-90	---	---
	6-24	Silty clay, channery clay, shaly silty clay loam.	MH, CH, ML, CL	A-7, A-6	0-10	70-95	65-95	65-95	55-90	35-55	12-30
	24-42	Shaly silty clay loam, channery silty clay, shaly clay.	GM, GC, ML, CL	A-7, A-6, A-2	5-20	25-80	20-70	15-60	15-55	35-49	10-20
	42	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
VaC	0-17	Loamy sand	SM	A-2, A-4	0-5	95-100	95-100	90-100	25-45	---	---
Vanderlip	17-60	Loamy sand, gravelly loamy sand, cherty sand.	SM, SP, SP-SM	A-1, A-2, A-3	0-10	60-100	45-100	25-75	2-30	<25	NP
VdD	0-17	Very stony loamy sand.	SM	A-1, A-2 A-4	3-20	95-100	95-100	90-100	25-45	---	---
Vanderlip	17-60	Loamy sand, gravelly loamy sand, cherty sand.	SM, SP	A-1, A-2 A-3	0-10	60-100	45-100	25-75	2-30	<25	NP
WeB	0-10	Channery silt loam.	GM, ML, SM	A-1, A-2, A-4	0-10	35-70	35-70	25-65	20-55	30-40	4-10
Weikert	10-14	Shaly loam, very shaly silt loam, channery loam.	GM, GP-GM	A-1, A-2	0-20	15-60	10-45	5-35	5-35	28-36	3-9
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
WeC	0-10	Channery silt loam.	GM, ML, SM	A-1, A-2, A-4	0-10	35-70	35-70	25-65	20-55	30-40	4-10
Weikert	10-14	Shaly loam, very shaly silt loam, channery loam.	GM, GP-GM	A-1, A-2	0-20	15-60	10-45	5-35	5-35	28-36	3-9
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
WeD---------- Weikert	0-10	Channery silt loam.	GM, ML, SM	A-1, A-2, A-4	0-10	35-70	35-70	25-65	20-55	30-40	4-10
	10-14	Shaly loam, very shaly silt loam, channery loam.	GM, GP-GM	A-1, A-2	0-20	15-60	10-45	5-35	5-35	28-36	3-9
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
WhB, WhC---------- Wharton	0-8	Silt loam-------	ML, CL	A-4, A-6	0-5	95-100	90-100	80-95	70-90	---	---
	8-41	Clay loam, shaly silty clay loam, shaly silt loam.	ML, CL	A-7, A-6	0-10	75-100	70-100	65-95	60-90	35-45	10-30
	41-78	Silt loam, shaly clay loam, very shaly silt loam.	ML, GM, SM	A-4, A-6, A-7, A-2	0-50	45-100	30-100	25-95	25-90	30-45	5-15
WvB---------- Wharton Variant	0-7	Silt loam-------	CL	A-6, A-4	0-5	95-100	90-100	80-95	70-90	---	---
	7-24	Silty clay, silty clay loam, shaly clay.	CL	A-6, A-7	0-5	95-100	90-100	80-95	70-90	35-50	15-30
	24-54	Silty clay loam, silty clay, shaly clay loam.	CL	A-6, A-7	0-10	65-95	60-90	55-80	50-70	35-50	15-30
	54-63	Shaly silty clay loam, shaly clay loam.	ML, CL, GC, SM	A-4, A-6, A-7	0-10	60-85	50-80	45-75	40-70	35-50	10-25
	63	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Clay <2mm	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/in	pH				Pct
AbB, AbC--------- Albrights	0-10 10-22 22-60	15-27 18-35 18-35	1.30-1.40 1.30-1.50 1.40-1.70	0.6-2.0 0.6-2.0 0.2-0.6	0.14-0.18 0.10-0.14 0.04-0.08	4.5-5.5 4.5-5.5 5.1-6.5	Low---------- Low---------- Low----------	0.28 0.28 0.28	3-2	1-4
AcB, AcD--------- Albrights	0-10 10-22 22-60	15-27 18-35 18-35	1.20-1.40 1.30-1.50 1.40-1.70	0.6-2.0 0.6-2.0 0.2-0.6	0.14-0.18 0.10-0.14 0.04-0.08	4.5-5.5 4.5-5.5 5.1-6.5	Low---------- Low---------- Low----------	0.20 0.28 0.28	3-2	---
AnB-------------- Andover Variant	0-8 8-18 18-50 50-60	10-27 18-35 18-35 18-40	1.20-1.40 1.30-1.60 1.40-1.70 1.40-1.60	0.6-2.0 0.6-2.0 0.06-0.2 0.06-0.6	0.10-0.20 0.08-0.12 0.06-0.10 0.08-0.12	4.5-5.5 4.5-5.5 5.6-7.3 5.6-7.3	Low---------- Low---------- Low---------- Low----------	0.43 0.17 0.17 0.17	3-2	1-4
AoB-------------- Andover Variant	0-8 8-18 18-50 50-60	10-27 18-35 18-35 18-40	1.20-1.40 1.30-1.60 1.40-1.70 1.40-1.60	0.6-2.0 0.6-2.0 0.06-0.2 0.06-0.6	0.08-0.20 0.08-0.20 0.06-0.10 0.08-0.12	4.5-5.5 4.5-5.5 5.6-7.3 5.6-7.3	Low---------- Low---------- Low---------- Low----------	0.43 0.17 0.17 0.17	3-2	---
Ba*-------------- Basher	0-7 7-35 35-60	6-18 6-18 6-18	1.15-1.40 1.15-1.45 1.25-1.55	0.6-2.0 0.6-2.0 0.6-6.0	0.15-0.21 0.10-0.19 0.10-0.19	4.5-6.0 4.5-6.0 4.5-6.5	Low---------- Low---------- Low----------	0.49 0.37 0.37	4	1-5
BeB, BeC--------- Bedington	0-7 7-37 37-63	15-25 18-32 18-32	1.20-1.50 1.30-1.60 1.40-1.60	0.6-2.0 0.6-2.0 0.6-2.0	0.12-0.16 0.12-0.14 0.08-0.12	4.5-7.3 4.5-5.5 4.5-5.5	Low---------- Low---------- Low----------	0.32 0.28 0.17	4	1-2
BdD-------------- Bedington	0-7 7-37 37-63	15-25 18-32 18-32	1.20-1.50 1.30-1.60 1.40-1.60	0.6-2.0 0.6-2.0 0.6-2.0	0.12-0.18 0.12-0.14 0.08-0.12	4.5-7.3 4.5-5.5 4.5-5.5	Low---------- Low---------- Low----------	0.32 0.28 0.17	4	---
BkB, BkC, BkD---- Berks	0-12 12-25 25-29 29	5-23 5-20 5-20 ---	1.20-1.50 1.20-1.60 1.20-1.60 ---	0.6-6.0 0.6-6.0 2.0-6.0 ---	0.08-0.12 0.06-0.10 0.06-0.10 ---	4.5-5.5 4.5-5.5 4.5-5.5 ---	Low---------- Low---------- Low---------- ---	0.24 0.17 0.17 ---	3	.5-3
BmC*, BmD*, BmF*: Berks----------	0-12 12-25 25-29 29	5-23 5-20 5-20 ---	1.20-1.50 1.20-1.60 1.20-1.60 ---	0.6-6.0 0.6-6.0 2.0-6.0 ---	0.08-0.12 0.06-0.10 0.06-0.10 ---	4.5-5.5 4.5-5.5 4.5-5.5 ---	Low---------- Low---------- Low---------- ---	0.24 0.17 0.17 ---	3	.5-3
Weikert--------- 	0-10 10-14 14	15-27 15-27 ---	1.20-1.40 1.20-1.40 ---	2.0-6.0 2.0-6.0 ---	0.08-0.14 0.04-0.08 ---	4.5-5.5 4.5-5.5 ---	Low---------- Low---------- ---	0.28 0.28 ---	2	1-3
BoB-------------- Blairton	0-12 12-34 34	10-27 18-35 ---	1.40-1.60 1.50-1.70 ---	0.6-2.0 0.2-0.6 ---	0.14-0.18 0.08-0.14 ---	3.6-5.5 3.6-5.5 ---	Low---------- Low---------- ---	0.32 0.28 ---	3-2	1-4
BoC-------------- Blairton	0-12 12-34 34	10-27 18-35 ---	1.40-1.60 1.50-1.70 ---	0.6-2.0 0.2-0.6 ---	0.14-0.18 0.08-0.14 ---	3.6-5.5 3.6-5.5 ---	Low---------- Low---------- ---	0.32 0.28 ---	3-2	1-4
BrB, BrC--------- Brinkerton	0-10 10-21 21-40 40-60	15-30 15-35 15-35 15-25	1.20-1.40 1.20-1.50 1.30-1.50 1.20-1.60	0.6-2.0 0.6-2.0 0.06-0.2 0.06-0.6	0.18-0.24 0.14-0.18 0.08-0.12 0.08-0.12	4.5-6.0 4.5-6.0 4.5-6.0 5.1-6.5	Low---------- Moderate----- Moderate----- Low----------	0.43 0.32 0.32 0.20	3-2	1-4
BuB, BuC--------- Buchanan	0-4 4-21 21-60	10-27 18-30 18-35	1.20-1.40 1.30-1.60 1.40-1.70	0.6-2.0 0.6-2.0 0.06-0.2	0.12-0.18 0.10-0.16 0.06-0.10	4.5-5.5 4.5-5.5 4.5-5.5	Moderate----- Moderate----- Moderate-----	0.28 0.28 0.17	3-2	1-3

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/in	pH				Pct
BxB, BxD----------	0-4	10-27	1.20-1.40	0.6-2.0	0.11-0.16	4.5-5.5	Moderate-----	0.28	3-2	---
Buchanan	4-21	18-30	1.30-1.60	0.6-2.0	0.10-0.16	4.5-5.5	Moderate-----	0.28		
	21-60	18-35	1.40-1.70	0.06-0.2	0.06-0.10	4.5-5.5	Moderate-----	0.17		
CaB----------	0-7	15-35	1.20-1.40	0.6-2.0	0.18-0.22	4.5-5.5	Low----------	0.43	3-2	2-4
Cavode	7-39	35-45	1.20-1.50	0.06-0.2	0.10-0.14	4.5-5.5	Moderate-----	0.28		
	39-62	35-45	1.20-1.50	0.06-0.2	0.08-0.12	4.5-5.5	Moderate-----	0.28		
CbB, CbC----------	0-7	10-27	1.20-1.40	0.6-2.0	0.14-0.20	5.1-6.5	Low----------	0.37	3-2	1-3
Clarksburg	7-20	22-35	1.30-1.50	0.6-2.0	0.12-0.18	5.1-6.5	Moderate-----	0.28		
	20-50	22-35	1.40-1.70	0.06-0.6	0.06-0.12	5.1-6.5	Moderate-----	0.28		
	50-60	22-40	1.20-1.60	0.06-0.6	0.06-0.16	5.1-6.5	Moderate-----	0.28		
CvB----------	0-7	15-27	1.20-1.40	0.6-2.0	0.10-0.16	3.6-5.5	Low----------	0.28	3	1-4
Clymer	7-27	18-30	1.20-1.50	0.6-2.0	0.10-0.14	3.6-5.5	Low----------	0.17		
	27-47	15-27	1.20-1.40	0.6-2.0	0.06-0.12	3.6-5.5	Low----------	0.17		
	47	---	---	---	---	---	----------	----		
CyB, CyD----------	0-7	15-27	1.20-1.40	0.6-2.0	0.10-0.16	3.6-5.5	Low----------	0.28	3	---
Clymer	7-27	18-30	1.20-1.50	0.6-2.0	0.10-0.14	3.6-5.5	Low----------	0.17		
	27-47	15-27	1.20-1.40	0.6-2.0	0.06-0.12	3.6-5.5	Low----------	0.17		
	47	---	---	---	---	---	----------	----		
DR*:										
Dystrochrepts.										
Rubble land.										
EdB, EdC, EdD----	0-6	15-35	1.20-1.50	0.6-2.0	0.14-0.20	5.1-7.8	Low----------	0.28	3	.5-4
Edom	6-24	35-60	1.30-1.60	0.2-2.0	0.10-0.14	5.1-7.8	Moderate-----	0.28		
	24-42	27-60	1.30-1.60	0.2-2.0	0.04-0.12	5.6-7.8	Moderate-----	0.17		
	42	---	---	---	---	---	----------	----		
EmB*:										
Edom----------	0-6	15-35	1.20-1.50	0.6-2.0	0.14-0.20	5.1-7.8	Low----------	0.28	3	.5-4
	6-24	35-60	1.30-1.60	0.2-2.0	0.10-0.14	5.1-7.8	Moderate-----	0.28		
	24-42	27-60	1.30-1.60	0.2-2.0	0.04-0.12	5.6-7.8	Moderate-----	0.17		
	42	---	---	---	---	---	----------	----		
Weikert----------	0-10	15-27	1.20-1.40	2.0-6.0	0.08-0.14	4.5-5.5	Low----------	0.28	2	1-3
	10-14	15-27	1.20-1.40	2.0-6.0	0.04-0.08	4.5-5.5	Low----------	0.28		
	14	---	---	---	---	---	----------	----		
EmC*, EmD*:										
Edom----------	0-6	15-35	1.20-1.50	0.6-2.0	0.14-0.20	5.1-7.8	Low----------	0.28	3	.5-4
	6-24	35-60	1.30-1.60	0.2-2.0	0.10-0.14	5.1-7.8	Moderate-----	0.28		
	24-42	27-60	1.30-1.60	0.2-2.0	0.04-0.12	5.6-7.8	Moderate-----	0.17		
	42	---	---	---	---	---	----------	----		
Weikert----------	0-10	15-27	1.20-1.40	2.0-6.0	0.08-0.14	4.5-5.5	Low----------	0.28	2	1-3
	10-14	15-27	1.20-1.40	2.0-6.0	0.04-0.08	4.5-5.5	Low----------	0.28		
	14	---	---	---	---	---	----------	----		
ErB, ErC----------	0-9	16-20	1.20-1.40	0.6-2.0	0.14-0.20	4.5-5.5	Low----------	0.43	3	2-4
Ernest	9-27	20-35	1.30-1.50	0.6-2.0	0.12-0.16	4.5-5.5	Moderate-----	0.28		
	27-48	18-30	1.30-1.60	0.06-0.6	0.08-0.12	4.5-5.5	Low----------	0.28		
	48-60	20-35	1.20-1.50	0.06-0.6	0.08-0.12	4.5-5.5	Moderate-----	0.28		
GpB, GpC, GpD-----	0-9	15-27	1.20-1.40	0.6-2.0	0.10-0.16	3.6-5.5	Low----------	0.28	3	1-4
Gilpin	9-25	18-35	1.20-1.50	0.6-2.0	0.10-0.16	3.6-5.5	Low----------	0.28		
	25-31	15-35	1.20-1.50	0.6-2.0	0.06-0.10	3.6-5.5	Low----------	0.28		
	31	---	---	---	---	---	----------	----		
HeB*, HeD*:										
Hagerstown------	0-8	15-35	1.20-1.40	0.6-2.0	0.16-0.24	4.5-5.5	Low----------	0.32	4	1-5
	8-41	23-60	1.20-1.60	0.6-2.0	0.10-0.24	4.5-7.3	Moderate-----	0.28		
	41-60	23-60	1.20-1.60	0.6-2.0	0.10-0.24	5.1-7.3	Moderate-----	0.28		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/in	pH				Pct
HeB*, HeD*: Rock outcrop.										
HgB, HgC----------	0-6	7-18	1.20-1.40	2.0-6.0	0.10-0.14	3.6-5.5	Low----------	0.24	3-2	2-4
Hazleton	6-49	7-18	1.20-1.40	2.0-20	0.08-0.12	3.6-5.5	Low----------	0.17		
	49-60	5-15	1.20-1.40	2.0-20	0.04-0.10	3.6-5.5	Low----------	0.17		
HhB, HhC, HhF----	0-6	7-18	1.20-1.40	2.0-6.0	0.10-0.16	3.6-5.5	Low----------	0.24	3-2	---
Hazleton	6-49	7-18	1.20-1.40	2.0-20	0.08-0.12	3.6-5.5	Low----------	0.17		
	49-60	5-15	1.20-1.40	2.0-20	0.04-0.10	3.6-5.5	Low----------	0.17		
Ho----------	0-6	15-30	1.00-1.30	0.6-2.0	0.20-0.24	5.6-7.3	Low----------	0.28	5	2-5
Holly	6-43	18-35	1.20-1.40	0.2-2.0	0.17-0.21	5.1-7.3	Low----------	0.28		
	43-60	5-25	1.10-1.50	0.6-6.0	0.07-0.18	5.6-7.8	Low----------	0.28		
HuB, HuC, HxB2, HxC2, HxD2------	0-10	15-27	1.20-1.40	0.6-2.0	0.14-0.18	4.5-5.5	Low----------	0.28	4	1-3
Hublersburg	10-60	20-45	1.20-1.60	0.6-2.0	0.12-0.16	4.5-5.5	Moderate-----	0.28		
LaB, LaC, LaD----	0-6	10-27	1.20-1.40	0.6-6.0	0.10-0.14	3.6-5.5	Low----------	0.28	4	1-4
Laidig	6-32	18-35	1.30-1.50	0.6-6.0	0.08-0.12	3.6-5.5	Low----------	0.28		
	32-71	18-35	1.30-1.60	0.2-0.6	0.06-0.10	3.6-5.5	Low----------	0.17		
LeB, LeD, LeF----	0-6	10-27	1.20-1.40	0.6-6.0	0.08-0.12	3.6-5.5	Low----------	0.28	4	---
Laidig	6-32	18-35	1.30-1.50	0.6-6.0	0.08-0.12	3.6-5.5	Low----------	0.28		
	32-71	18-35	1.30-1.60	0.2-0.6	0.06-0.10	3.6-5.5	Low----------	0.17		
LkB, LkC, LkD, LLF----------	0-12	10-20	1.20-1.50	0.6-6.0	0.14-0.18	4.5-5.5	Low----------	0.20	3	1-3
Leck Kill	12-38	17-32	1.40-1.70	0.6-6.0	0.12-0.16	4.5-5.5	Low----------	0.17		
	38-45	17-32	1.30-1.60	0.6-6.0	0.04-0.08	4.5-5.5	Low----------	0.28		
	45	---	---	---	---	---	----------	----		
LmB----------	0-41	3-15	1.10-1.30	2.0-6.0	0.03-0.05	3.6-5.0	Low----------	0.17	3	.5-2
Leetonia	41-60	3-10	1.10-1.40	6.0-20	0.02-0.03	3.6-5.0	Low----------	0.17		
LnD, LnF----------	0-5	4-16	1.20-1.40	0.6-20	0.08-0.12	4.5-5.5	Low----------	0.24	3	---
Lehew	5-17	5-18	1.20-1.40	0.6-20	0.06-0.10	4.5-5.5	Low----------	0.17		
	17-26	5-18	1.20-1.40	0.6-20	0.06-0.10	4.5-5.5	Low----------	0.17		
	26	---	---	---	---	---	----------	----		
Lo*----------	0-30	10-18	1.20-1.40	2.0-6.0	0.14-0.18	3.6-6.0	Low----------	0.49	4	1-4
Linden	30-45	10-18	1.20-1.40	2.0-6.0	0.14-0.18	3.6-6.0	Low----------	0.64		
	45-60	5-25	1.20-1.40	6.0-20	0.05-0.08	3.6-6.0	Low----------	0.17		
Lp----------	0-7	15-27	1.20-1.40	0.6-2.0	0.20-0.24	5.1-7.3	Low----------	0.37	5	1-4
Lobdell	7-29	18-35	1.20-1.60	0.6-2.0	0.17-0.22	5.1-7.3	Low----------	0.37		
	29-60	15-35	1.10-1.60	0.6-6.0	0.12-0.18	5.6-7.3	Low----------	0.37		
MeB, MeC----------	0-4	10-27	1.10-1.30	0.6-2.0	0.12-0.16	4.5-5.5	Low----------	0.28	4	1-4
Meckesville	4-29	18-35	1.20-1.40	0.6-2.0	0.12-0.16	4.5-5.5	Low----------	0.28		
	29-60	18-35	1.30-1.60	0.2-0.6	0.08-0.12	4.5-5.5	Low----------	0.28		
MkB, MkD----------	0-4	10-27	1.10-1.30	0.6-2.0	0.12-0.16	4.5-5.5	Low----------	0.28	4	---
Meckesville	4-29	18-35	1.20-1.40	0.6-2.0	0.10-0.14	4.5-5.5	Low----------	0.28		
	29-60	18-35	1.30-1.60	0.2-0.6	0.08-0.12	4.5-5.5	Low----------	0.28		
MnB, MnC, MnD----	0-21	10-27	1.10-1.40	0.6-2.0	0.14-0.18	5.1-7.3	Low----------	0.28	4	.5-3
Mertz	21-60	15-30	1.10-1.40	0.2-0.6	0.12-0.18	5.1-7.3	Moderate-----	0.17		
	60-80	15-30	1.10-1.40	0.2-0.6	0.08-0.18	4.5-5.5	Moderate-----	0.17		
MoB----------	0-6	10-27	1.20-1.40	0.6-2.0	0.18-0.24	4.5-5.5	Low----------	0.43	3	2-4
Monongahela	6-20	18-35	1.30-1.50	0.6-2.0	0.14-0.18	4.5-5.5	Low----------	0.43		
	20-54	18-35	1.30-1.60	0.06-0.6	0.08-0.12	4.5-5.5	Low----------	0.43		
	54-86	10-35	1.20-1.40	0.2-0.6	0.08-0.12	4.5-5.5	Low----------	0.43		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/in	pH				Pct
MrB, MrC, MrD---- Morrison	0-13	5-20	1.20-1.40	0.6-6.0	0.12-0.16	3.6-5.5	Low----------	0.17	3	1-4
	13-45	10-27	1.30-1.50	0.6-6.0	0.12-0.14	3.6-6.0	Low----------	0.17		
	45-60	5-20	1.20-1.40	0.6-6.0	0.06-0.10	5.1-6.0	Low----------	0.17		
MsB, MsD, MsF---- Morrison	0-13	5-20	1.20-1.40	0.6-6.0	0.10-0.16	3.6-5.5	Low----------	0.17	3	---
	13-45	10-27	1.30-1.50	0.6-6.0	0.12-0.14	3.6-6.0	Low----------	0.17		
	45-60	5-20	1.20-1.40	0.6-6.0	0.06-0.10	5.1-6.0	Low----------	0.17		
MuB, MuC, MuD, MxB, MxD-------- Murrill	0-11	10-20	1.20-1.50	0.6-2.0	0.12-0.16	4.5-6.0	Low----------	0.24	4	1-4
	11-60	18-35	1.40-1.70	0.6-2.0	0.10-0.14	4.5-6.0	Low----------	0.17		
OuC, OuD--------- Opequon	0-8	27-45	1.20-1.50	0.2-2.0	0.16-0.21	5.6-7.3	High---------	0.37	2	1-4
	8-16	35-55	1.40-1.70	0.2-2.0	0.12-0.16	5.6-7.3	High---------	0.28		
	16	---	---	---	---	---	----------	----		
OxF*: Opequon---------	0-8	27-45	1.20-1.50	0.2-2.0	0.16-0.21	5.6-7.3	High---------	0.37	2	1-4
	8-16	35-55	1.40-1.70	0.2-2.0	0.12-0.16	5.6-7.3	High---------	0.28		
	16	---	---	---	---	---	----------	----		
Hagerstown------	0-8	15-35	1.20-1.40	0.6-2.0	0.16-0.24	4.5-5.5	Low----------	0.32	4	1-5
	8-41	23-60	1.20-1.60	0.6-2.0	0.10-0.24	4.5-7.3	Moderate-----	0.28		
	41-60	23-60	1.20-1.60	0.6-2.0	0.10-0.24	5.1-7.3	Moderate-----	0.28		
Rock outcrop.										
Pt*: Pits.										
Dumps.										
Pu--------------- Purdy	0-9	18-35	1.30-1.50	0.2-0.6	0.18-0.24	3.6-5.5	Moderate-----	0.43	3	2-4
	9-34	25-40	1.30-1.60	0.06-0.2	0.12-0.18	3.6-5.5	Moderate-----	0.28		
	34-60	35-50	1.30-1.60	0.06-0.2	0.10-0.16	3.6-5.5	Moderate-----	0.28		
Qu*: Quarries.										
Dumps.										
Ty--------------- Tyler	0-7	14-26	1.20-1.40	0.6-2.0	0.18-0.22	3.6-6.5	Low----------	0.43	3	1-4
	7-20	20-33	1.25-1.60	0.2-0.6	0.16-0.20	3.6-5.5	Moderate-----	0.43		
	20-48	18-33	1.50-1.85	0.06-0.2	0.04-0.12	3.6-5.5	Low----------	0.43		
	48-62	12-30	1.30-1.70	0.2-0.6	0.04-0.12	4.5-6.0	Low----------	0.43		
UD*: Udifluvents.										
Dystrochrepts.										
US*. Udorthents										
Ux*. Urban land										
UYB*: Urban land.										
Berks----------	0-12	5-23	1.20-1.50	0.6-6.0	0.08-0.12	4.5-5.5	Low----------	0.24	3	.5-3
	12-25	5-20	1.20-1.60	0.6-6.0	0.06-0.10	4.5-5.5	Low----------	0.17		
	25-29	5-20	1.20-1.60	2.0-6.0	0.06-0.10	4.5-5.5	Low----------	0.17		
	29	---	---	---	---	---	----------	----		
UYD*: Urban land.										

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm^3	In/hr	In/in	pH				Pct
UYD*:										
Berks	0-12	5-23	1.20-1.50	0.6-6.0	0.08-0.12	4.5-5.5	Low	0.24	3	.5-3
	12-25	5-20	1.20-1.60	0.6-6.0	0.06-0.10	4.5-5.5	Low	0.17		
	25-29	5-20	1.20-1.60	2.0-6.0	0.06-0.10	4.5-5.5	Low	0.17		
	29	---	---	---	---	---	---	---		
UZB*, UZD*:										
Urban land.										
Edom	0-6	15-35	1.20-1.50	0.6-2.0	0.14-0.20	5.1-7.8	Low	0.28	3	.5-4
	6-24	35-60	1.30-1.60	0.2-2.0	0.10-0.14	5.1-7.8	Moderate	0.28		
	24-42	27-60	1.30-1.60	0.2-2.0	0.04-0.12	5.6-7.8	Moderate	0.17		
	42	---	---	---	---	---	---	---		
VaC	0-17	5-10	1.10-1.30	6.0-20	0.06-0.10	4.5-6.0	Low	0.24	3-2	.5-2
Vanderlip	17-60	5-10	1.10-1.30	6.0-20	0.04-0.06	4.5-6.0	Low	0.17		
VdD	0-17	5-10	1.10-1.30	6.0-20	0.06-0.10	4.5-6.0	Low	0.24	3-2	---
Vanderlip	17-60	5-10	1.10-1.30	6.0-20	0.04-0.06	4.5-6.0	Low	0.17		
WeB	0-10	15-27	1.20-1.40	2.0-6.0	0.08-0.14	4.5-5.5	Low	0.28	2	1-3
Weikert	10-14	15-27	1.20-1.40	2.0-6.0	0.04-0.08	4.5-5.5	Low	0.28		
	14	---	---	---	---	---	---	---		
WeC	0-10	15-27	1.20-1.40	2.0-6.0	0.08-0.14	4.5-5.5	Low	0.28	2	1-3
Weikert	10-14	15-27	1.20-1.40	2.0-6.0	0.04-0.08	4.5-5.5	Low	0.28		
	14	---	---	---	---	---	---	---		
WeD	0-10	15-27	1.20-1.40	2.0-6.0	0.08-0.14	4.5-5.5	Low	0.28	2	1-3
Weikert	10-14	15-27	1.20-1.40	2.0-6.0	0.04-0.08	4.5-5.5	Low	0.28		
	14	---	---	---	---	---	---	---		
WhB, WhC	0-8	15-25	1.10-1.30	0.6-2.0	0.16-0.20	4.0-5.5	Low	0.32	3	1-4
Wharton	8-41	15-35	1.20-1.50	0.06-0.6	0.10-0.16	4.0-5.5	Moderate	0.28		
	41-78	20-45	1.20-1.60	0.06-0.6	0.08-0.12	4.0-5.5	Moderate	0.17		
WvB	0-7	15-25	1.10-1.30	0.6-2.0	0.16-0.20	5.1-7.3	Low	0.32	3	1-4
Wharton Variant	7-24	27-45	1.10-1.40	0.6-2.0	0.14-0.18	5.1-7.3	Low	0.28		
	24-54	27-45	1.30-1.70	0.06-0.2	0.06-0.08	7.4-7.8	Low	0.28		
	54-63	27-40	1.20-1.50	0.06-0.6	0.08-0.10	7.4-7.8	Low	0.28		
	63	---	---	---	---	---	---	---		

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

[The definitions of "flooding" and "water table" in the text explain terms such as "rare," "brief," "apparent," and "perched." The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
AbB, AbC---------- Albrights	C	None--------	---	---	0.5-3.0	Perched	Nov-Mar	>60	---	Moderate	High-----	High.
AcB, AcD---------- Albrights	C	None--------	---	---	0.5-3.0	Perched	Nov-Mar	>60	---	Moderate	High-----	High.
AnB, AoB---------- Andover Variant	D	None--------	---	---	0.0-0.5	Perched	Oct-Jun	>60	---	High-----	High-----	High.
Ba*--------------- Basher	B	Occasional	Brief-----	Dec-Apr	0.5-2.0	Apparent	Jan-May	>60	---	High-----	Moderate	Moderate.
BeB, BeC---------- Bedington	B	None--------	---	---	>6.0	---	---	>40	Rippable	Moderate	Low------	High.
BdD--------------- Bedington	B	None--------	---	---	>6.0	---	---	>40	Rippable	Moderate	Low------	High.
BkB, BkC, BkD----- Berks	C	None--------	---	---	>6.0	---	---	20-40	Rippable	Low------	Low------	High.
BmC*, BmD*, BmF*:												
Berks------------	C	None--------	---	---	>6.0	---	---	20-40	Rippable	Low------	Low------	High.
Weikert----------	C/D	None--------	---	---	>6.0	---	---	10-20	Rippable	Moderate	Moderate	Moderate.
BoB, BoC---------- Blairton	C	None--------	---	---	0.5-3.0	Perched	Nov-Mar	20-40	Rippable	High-----	High-----	High.
BrB, BrC---------- Brinkerton	D	None--------	---	---	0.0-0.5	Perched	Sep-Jun	>60	---	High-----	High-----	High.
BuB, BuC, BxB, BxD--------------- Buchanan	C	None--------	---	---	1.0-2.0	Perched	Nov-Mar	>60	---	Moderate	High-----	High.
CaB--------------- Cavode	C	None--------	---	---	0.5-1.5	Perched	Oct-May	40-60	Rippable	High-----	High-----	High.
CbB, CbC---------- Clarksburg	C	None--------	---	---	1.5-3.0	Perched	Nov-Mar	>60	---	Moderate	Moderate	Moderate.
CvB, CyB, CyD----- Clymer	B	None--------	---	---	>6.0	---	---	>40	Hard	Moderate	Low------	High.
DR*:												
Dystrochrepts.												
Rubble land.												

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
EdB, EdC, EdD----- Edom	C	None--------	---	---	>6.0	---	---	>40	Rippable	Moderate	High-----	Low.
EmB*, EmC*, EmD*: Edom----------	C	None--------	---	---	>6.0	---	---	>40	Rippable	Moderate	High-----	Low.
Weikert----------	C/D	None--------	---	---	>6.0	---	---	10-20	Rippable	Moderate	Moderate	Moderate.
ErB, ErC---------- Ernest	C	None--------	---	---	1.5-3.0	Perched	Dec-Apr	>60	---	Moderate	Moderate	Moderate.
GpB, GpC, GpD----- Gilpin	C	None--------	---	---	>6.0	---	---	20-40	Rippable	Moderate	Low------	High.
HeB*, HeD*: Hagerstown-------	C	None--------	---	---	>6.0	---	---	>40	Hard	Moderate	Moderate	Low.
Rock outcrop.												
HgB, HgC, HhB, HhC, HhF--------- Hazleton	B	None--------	---	---	>6.0	---	---	>40	Rippable	Moderate	Low------	High.
Ho---------- Holly	B/D	Frequent----	Brief-----	Nov-May	0-0.5	Apparent	Dec-May	>60	---	High-----	High-----	Moderate.
HuB, HuC, HxB2, HxC2, HxD2------- Hublersburg	C	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Moderate.
LaB, LaC, LaD, LeB, LeD, LeF---- Laidig	C	None--------	---	---	3.0-4.0	Perched	Jan-Mar	>60	---	Moderate	Moderate	High.
LkB, LkC, LkD, LLF---------- Leck Kill	B	None--------	---	---	>6.0	---	---	>40	Rippable	Moderate	Low------	Moderate.
LmB---------- Leetonia	C	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
LnD, LnF---------- Lehew	C	None--------	---	---	>6.0	---	---	20-40	Hard	Low------	Low------	High.
Lo*---------- Linden	B	Occasional--	Brief-----	Jan-Apr	3.0-6.0	Apparent	Nov-Mar	>60	---	Moderate	Low------	High.
Lp---------- Lobdell	B	Occasional	Brief-----	Jan-Apr	1.5-3.0	Apparent	Dec-Apr	>60	---	High-----	Low------	Moderate.
MeB, MeC, MkB, MkD Meckesville	C	None--------	---	---	3.0-6.0	Perched	Nov-Apr	>60	---	Moderate	Moderate	High.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
MnB, MnC, MnD----- Mertz	C	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	High.
MoB---------- Monongahela	C	None--------	---	---	1.5-3.0	Perched	Dec-Apr	>60	---	High-----	High-----	High.
MrB, MrC, MrD, MsB, MsD, MsF---- Morrison	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Low------	High.
MuB, MuC, MuD----- Murrill	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	High.
MxB, MxD---------- Murrill	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	High.
OuC, OuD---------- Opequon	C	None--------	---	---	>6.0	---	---	12-20	Hard	Moderate	Moderate	Low.
OxF*:												
Opequon----------	C	None--------	---	---	>6.0	---	---	12-20	Hard	Moderate	Moderate	Low.
Hagerstown-------	C	None--------	---	---	>6.0	---	---	>40	Hard	Moderate	Moderate	Low.
Rock outcrop.												
Pt*:												
Pits.												
Dumps.												
Pu---------- Purdy	D	None--------	---	---	0-0.5	Apparent	Nov-Jun	>48	Soft	High-----	High-----	High.
Qu*:												
Quarries.												
Dumps.												
Ty---------- Tyler	D	None--------	---	---	0.5-1.5	Perched	Nov-May	>60	---	High-----	High-----	High.
UD*:												
Udifluvents.												
Dystrochrepts.												
US*.												
Udorthents												
Ux*.												
Urban land												

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
UYB*, UYD*: Urban land.												
Berks	C	None	---	---	>6.0	---	---	20-40	Rippable	Low	Low	High.
UZB*, UZD*: Urban land.												
Edom	C	None	---	---	>6.0	---	---	>40	Rippable	Moderate	High	Low.
VaC Vanderlip	A	None	---	---	>6.0	---	---	>60	---	Low	Low	High.
VdD Vanderlip	A	None	---	---	>6.0	---	---	>60	---	Low	Low	High.
WeB, WeC, WeD Weikert	C/D	None	---	---	>6.0	---	---	10-20	Rippable	Moderate	Moderate	Moderate.
WhB, WhC Wharton	C	None	---	---	1.5-3.0	Perched	Nov-Mar	>48	Rippable	High	High	High.
WvB Wharton Variant	C	None	---	---	0.5-1.5	Perched	Nov-Mar	>48	Rippable	High	High	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Albrights	Fine-loamy, mixed, mesic Aquic Fragiudalfs
Andover Variant	Fine-loamy, mixed, mesic Typic Fragiaqualfs
Basher	Coarse-loamy, mixed, mesic Fluvaquentic Dystrochrepts
Bedington	Fine-loamy, mixed, mesic Typic Hapludults
Berks	Loamy-skeletal, mixed, mesic Typic Dystrochrepts
Blairton	Fine-loamy, mixed, mesic Aquic Hapludults
Brinkerton	Fine-silty, mixed, mesic Typic Fragiaqualfs
Buchanan	Fine-loamy, mixed, mesic Aquic Fragiudults
Cavode	Clayey, mixed, mesic Aeric Ochraquults
Clarksburg	Fine-loamy, mixed, mesic Typic Fragiudalfs
Clymer	Fine-loamy, mixed, mesic Typic Hapludults
Edom	Fine, illitic, mesic Typic Hapludalfs
Ernest	Fine-loamy, mixed, mesic Aquic Fragiudults
Gilpin	Fine-loamy, mixed, mesic Typic Hapludults
Hagerstown	Fine, mixed, mesic Typic Hapludalfs
Hazleton	Loamy-skeletal, mixed, mesic Typic Dystrochrepts
Holly	Fine-loamy, mixed, nonacid, mesic Typic Fluvaquents
Hublersburg	Clayey, illitic, mesic Typic Hapludults
Laidig	Fine-loamy, mixed, mesic Typic Fragiudults
Leck Kill	Fine-loamy, mixed, mesic Typic Hapludults
Leetonia	Sandy-skeletal, siliceous, mesic Entic Haplorthods
Lehew	Loamy-skeletal, mixed, mesic Typic Dystrochrepts
Linden	Coarse-loamy, mixed, mesic Fluventic Dystrochrepts
Lobdell	Fine-loamy, mixed, mesic Fluvaquentic Eutrochrepts
Meckesville	Fine-loamy, mixed, mesic Typic Fragiudults
Mertz	Loamy-skeletal, mixed, mesic Typic Hapludults
Monongahela	Fine-loamy, mixed, mesic Typic Fragiudults
Morrison	Fine-loamy, mixed, mesic Ultic Hapludalfs
Murrill	Fine-loamy, mixed, mesic Typic Hapludults
Opequon	Clayey, mixed, mesic Lithic Hapludalfs
Purdy	Clayey, mixed, mesic Typic Ochraquults
Tyler	Fine-silty, mixed, mesic Aeric Fragiaquults
Vanderlip	Mesic, coated Typic Quartzipsamments
Weikert	Loamy-skeletal, mixed, mesic Lithic Dystrochrepts
Wharton	Fine-loamy, mixed, mesic Aquic Hapludults
Wharton Variant	Fine, mixed, mesic Aquic Fragiudalfs

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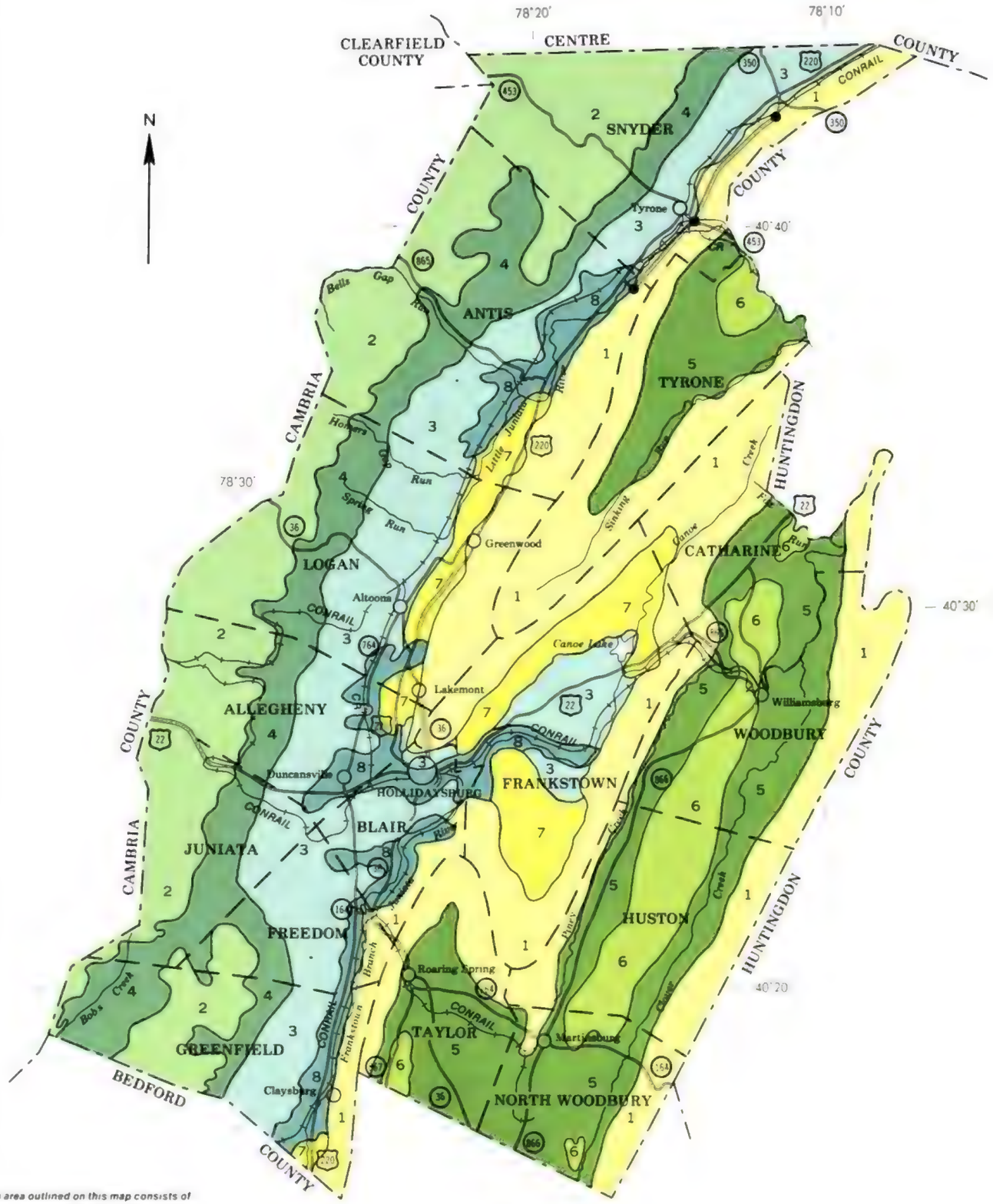


Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

THE PENNSYLVANIA STATE UNIVERSITY
AGRICULTURAL EXPERIMENT STATION AND AGRICULTURAL EXTENSION SERVICE AND THE PENNSYLVANIA DEPARTMENT OF AGRICULTURE
STATE SOIL AND WATER CONSERVATION COMMISSION

GENERAL SOIL MAP

BLAIR COUNTY, PENNSYLVANIA

Scale 1:253,440

1 0 1 2 3 4 Miles

1 0 1 2 3 4 Kilometers

LEGEND

AREAS DOMINATED BY SOILS FORMED IN MATERIAL DERIVED FROM SANDSTONE AND QUARTZITE AND FROM SANDSTONE AND SHALE

1 — Laidig-Hazleton-Buchanan association. Gently sloping to very steep, deep, well drained to somewhat poorly drained soils weathered from acid sandstone, quartzite, and shale, on mountain ridges and foot slopes

2 — Laidig-Hazleton-Clymer association: Gently sloping to very steep, deep, well drained soils weathered from acid sandstone, quartzite, and conglomerate; on broad mountaintops

AREAS DOMINATED BY SOILS FORMED IN MATERIAL DERIVED FROM SHALE AND FROM SHALE AND SANDSTONE

3 — Berks-Brinkerton-Weikert association. Gently sloping to very steep, deep to shallow, well drained and poorly drained soils weathered from olive, brown, and yellowish brown acid shale and colluvium derived from shale; on ridges, on foot slopes, and in drainageways

4 — Leck Kill-Meckesville-Albrights association: Gently sloping to very steep, deep, well drained to somewhat poorly drained soils weathered from red acid shale and sandstone; on ridges, on foot slopes, and in drainageways

AREAS DOMINATED BY SOILS FORMED IN MATERIAL DERIVED FROM LIMESTONE, CALCAREOUS SHALE, AND SANDSTONE

5 — Hublersburg-Murrill-Opequon association. Gently sloping to very steep, deep and shallow, well drained soils weathered from limestone and sandstone, on upland valley slopes and mountain foot slopes

6 — Edom-Opequon-Morrison association: Gently sloping to moderately steep, deep and shallow, well drained soils weathered from limestone, calcareous shale, and some sandstone, on ridges and valley slopes

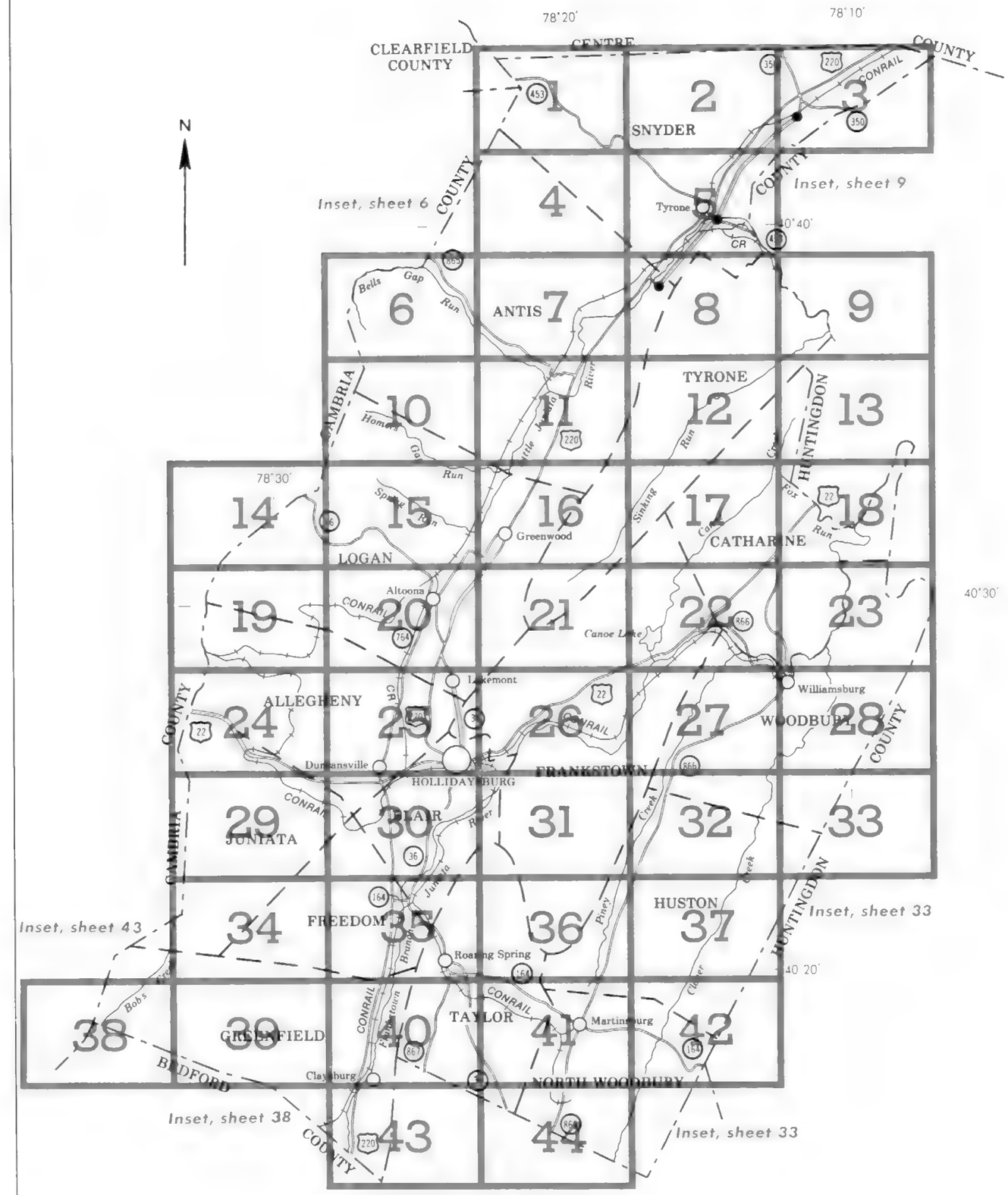
7 — Morrison association: Gently sloping to very steep, deep, well drained soils weathered from fine-grained calcareous sandstone and dolomitic limestone, on upland valley slopes

AREAS DOMINATED BY SOILS FORMED IN ALLUVIAL MATERIAL

8 — Basher-Monongahela-Purdy association. Nearly level and gently sloping, deep, moderately well drained to poorly drained soils formed in alluvium derived from shale and sandstone, on flood plains and terraces

Compiled 1980

1-13611



INDEX TO MAP SHEETS

BLAIR COUNTY, PENNSYLVANIA

Scale 1:144

1 0 1 2 3 4 Miles

1 0 1 2 3 4 Kilometers

Original text from each individual map sheet read:

This map is compiled on 1981 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL LEGEND

The publication symbol consists of letters or letters and a number. The first letter, always a capital, is the initial letter of the mapping unit name. The second letter is a capital if the mapping unit is broadly defined; otherwise, it is a small letter. The third letter, always a capital B, C, D, or F, indicates the slope. Most symbols without a slope letter are those of nearly level soils, however, some are for units that have considerable range of slope but have similar interpretations. A final number, 2, shows that the soil is eroded.

SYMBOL	NAME
AbB	Albrights gravelly silt loam, 3 to 8 percent slopes
AbC	Albrights gravelly silt loam, 8 to 15 percent slopes
AcB	Albrights very stony silt loam, 3 to 8 percent slopes
AcD	Albrights very stony silt loam, 8 to 25 percent slopes
AnB	Andover Variant loam, 3 to 8 percent slopes
AoB	Andover Variant extremely stony loam, 3 to 8 percent slopes
Ba	Basher soils
BeB	Bedington channery silt loam, 3 to 8 percent slopes
BeC	Bedington channery silt loam, 8 to 15 percent slopes
BdD	Bedington very stony silt loam, 8 to 25 percent slopes
BkB	Berks channery silt loam, 3 to 8 percent slopes
BkC	Berks channery silt loam, 8 to 15 percent slopes
BkD	Berks channery silt loam, 15 to 25 percent slopes
BmC	Berks-Weikert channery silt loams, 8 to 15 percent slopes
BmD	Berks-Weikert channery silt loams, 15 to 25 percent slopes
BmF	Berks-Weikert channery silt loams, 25 to 70 percent slopes
BoB	Blairton silt loam, 3 to 8 percent slopes
BoC	Blairton silt loam, 8 to 15 percent slopes
BrB	Brinkerton silt loam, 3 to 8 percent slopes
BrC	Brinkerton silt loam, 8 to 15 percent slopes
BuB	Buchanan gravelly silt loam, 3 to 8 percent slopes
BuC	Buchanan gravelly silt loam, 8 to 15 percent slopes
BxB	Buchanan extremely stony silt loam, 3 to 8 percent slopes
BxD	Buchanan extremely stony silt loam, 8 to 25 percent slopes
CaB	Cavode silt loam, 3 to 8 percent slopes
CbB	Clarksburg silt loam, 3 to 8 percent slopes
CbC	Clarksburg silt loam, 8 to 15 percent slopes
CvB	Clymer loam, 3 to 8 percent slopes
CyB	Clymer very stony loam, 3 to 8 percent slopes
CyD	Clymer very stony loam, 8 to 25 percent slopes
DR	Dystrochrepts-Rubble land complex
EdB	Edom silty clay loam, 3 to 8 percent slopes
EdC	Edom silty clay loam, 8 to 15 percent slopes
EdD	Edom silty clay loam, 15 to 25 percent slopes
EmB	Edom-Weikert complex, 3 to 8 percent slopes
EmC	Edom-Weikert complex, 8 to 15 percent slopes
EmD	Edom-Weikert complex, 15 to 25 percent slopes
ErB	Ernest silt loam, 3 to 8 percent slopes
ErC	Ernest silt loam, 8 to 15 percent slopes
GpB	Gilpin channery silt loam, 3 to 8 percent slopes
GpC	Gilpin channery silt loam, 8 to 15 percent slopes
GpD	Gilpin channery silt loam, 15 to 25 percent slopes
HeB	Hagerstown-Rock outcrop complex, 0 to 8 percent slopes
HeD	Hagerstown-Rock outcrop complex, 8 to 25 percent slopes
HgB	Hazleton channery sandy loam, 3 to 8 percent slopes
HgC	Hazleton channery sandy loam, 8 to 15 percent slopes
HhB	Hazleton very stony sandy loam, 3 to 8 percent slopes
HhC	Hazleton very stony sandy loam, 8 to 15 percent slopes
HhF	Hazleton very stony sandy loam, 25 to 70 percent slopes
Ho	Holly silt loam
HuB	Hublersburg cherty silt loam, 3 to 8 percent slopes
HuC	Hublersburg cherty silt loam, 8 to 15 percent slopes
HxB2	Hublersburg cherty silty clay loam, 3 to 8 percent slopes, eroded
HxC2	Hublersburg cherty silty clay loam, 15 to 25 percent slopes, eroded
HxD2	Hublersburg cherty silty clay loam, 15 to 25 percent slopes, eroded
LaB	Laidig channery loam, 3 to 8 percent slopes
LaC	Laidig channery loam, 8 to 15 percent slopes
LaD	Laidig channery loam, 15 to 25 percent slopes
LeB	Laidig extremely stony loam, 3 to 8 percent slopes
LeD	Laidig extremely stony loam, 8 to 25 percent slopes
LeF	Laidig extremely stony loam, 25 to 45 percent slopes
LkB	Leck Kill channery silt loam, 3 to 8 percent slopes
LkC	Leck Kill channery silt loam, 8 to 15 percent slopes
LkD	Leck Kill channery silt loam, 15 to 25 percent slopes
LLF	Leck Kill channery silt loam, very steep
LmB	Leetonia flaggy loamy sand, 3 to 8 percent slopes
LnD	Lehew very stony loam, 8 to 25 percent slopes
LnF	Lehew very stony loam, 25 to 50 percent slopes
Lo	Linden soils
Lp	Lobdell silt loam
MeB	Meckesville gravelly silt loam, 3 to 8 percent slopes
MeC	Meckesville gravelly silt loam, 8 to 15 percent slopes
MkB	Meckesville very stony silt loam, 3 to 8 percent slopes
MkD	Meckesville very stony silt loam, 8 to 25 percent slopes
MnB	Mertz channery silt loam, 3 to 8 percent slopes
MnC	Mertz channery silt loam, 8 to 15 percent slopes
MnD	Mertz channery silt loam, 15 to 25 percent slopes
MoB	Monongahela silt loam, 3 to 8 percent slopes
MrB	Morrison sandy loam, 3 to 8 percent slopes
MrC	Morrison sandy loam, 8 to 15 percent slopes
MrD	Morrison sandy loam, 15 to 25 percent slopes
MsB	Morrison very stony sandy loam, 3 to 8 percent slopes
MsD	Morrison very stony sandy loam, 8 to 25 percent slopes
MsF	Morrison very stony sandy loam, 25 to 50 percent slopes
MuB	Murrill gravelly silt loam, 3 to 8 percent slopes
MuC	Murrill gravelly silt loam, 8 to 15 percent slopes
MuD	Murrill gravelly silt loam, 15 to 25 percent slopes
MxB	Murrill extremely stony silt loam, 3 to 8 percent slopes
MxD	Murrill extremely stony silt loam, 8 to 25 percent slopes
OuC	Opequon silty clay loam, 5 to 15 percent slopes
OuD	Opequon silty clay loam, 15 to 25 percent slopes
OxF	Opequon-Hagerstown-Rock outcrop complex, 25 to 50 percent slopes
Pt	Pits-Dumps complex
Pu	Purdy silt loam
Qu	Quarries-Dumps complex
Ty	Tyler silt loam
UD	Udifluvents-Dystrochrepts complex
US	Udorthents, strip mine
Ux	Urban land
UYB	Urban land-Berks complex, 0 to 8 percent slopes
UYD	Urban land-Berks complex, 8 to 25 percent slopes
UZB	Urban land-Edom complex, 0 to 8 percent slopes
UZD	Urban land-Edom complex, 8 to 25 percent slopes
VaC	Vanderlip loamy sand, 3 to 25 percent slopes
VdD	Vanderlip very stony loamy sand, 3 to 25 percent slopes
WeB	Weikert channery silt loam, 3 to 8 percent slopes
WeC	Weikert channery silt loam, 8 to 15 percent slopes
WeD	Weikert channery silt loam, 15 to 25 percent slopes
WhB	Wharton silt loam, 3 to 8 percent slopes
WhC	Wharton silt loam, 8 to 15 percent slopes
WvB	Wharton Variant silt loam, 3 to 8 percent slopes
W	Water

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline & neatline

AD HOC BOUNDARY (label)

- Small airport, airfield, park, oilfield, cemetery, or flood pool

STATE COORDINATE TICK

LAND DIVISION CORNERS (sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEMS & DESIGNATIONS

- Interstate — 79
- Federal — 410
- State — 52
- County, farm or ranch — 378

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or small — water

PITS

- Gravel pit
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban areas)
- Church
- School
- Indian mound (label) — Indian Mound
- Located object (label) — Tower
- Tank (label) — GAS
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double line (label) — CANAL
  - Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial — water
- Intermittent

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS — CeA, FoB2

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

DEPRESSION OR SINK

SOIL SAMPLE SITE (normally not shown)

MISCELLANEOUS

- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot
- Abandoned iron ore pits 0.5-5 acres
- Fill material 0.5-5 acres

BLAIR COUNTY, PENNSYLVANIA — SHEET NUMBER 1

1 825 000 FEET

510 000 FEET

CENTRE COUNTY

CLEARFIELD COUNTY

CAMBRIA COUNTY

Moshannon Creek

Tipton Run

Springs Run

Sink Run

S N Y D E R

A N T I S

(Joins sheet 2)

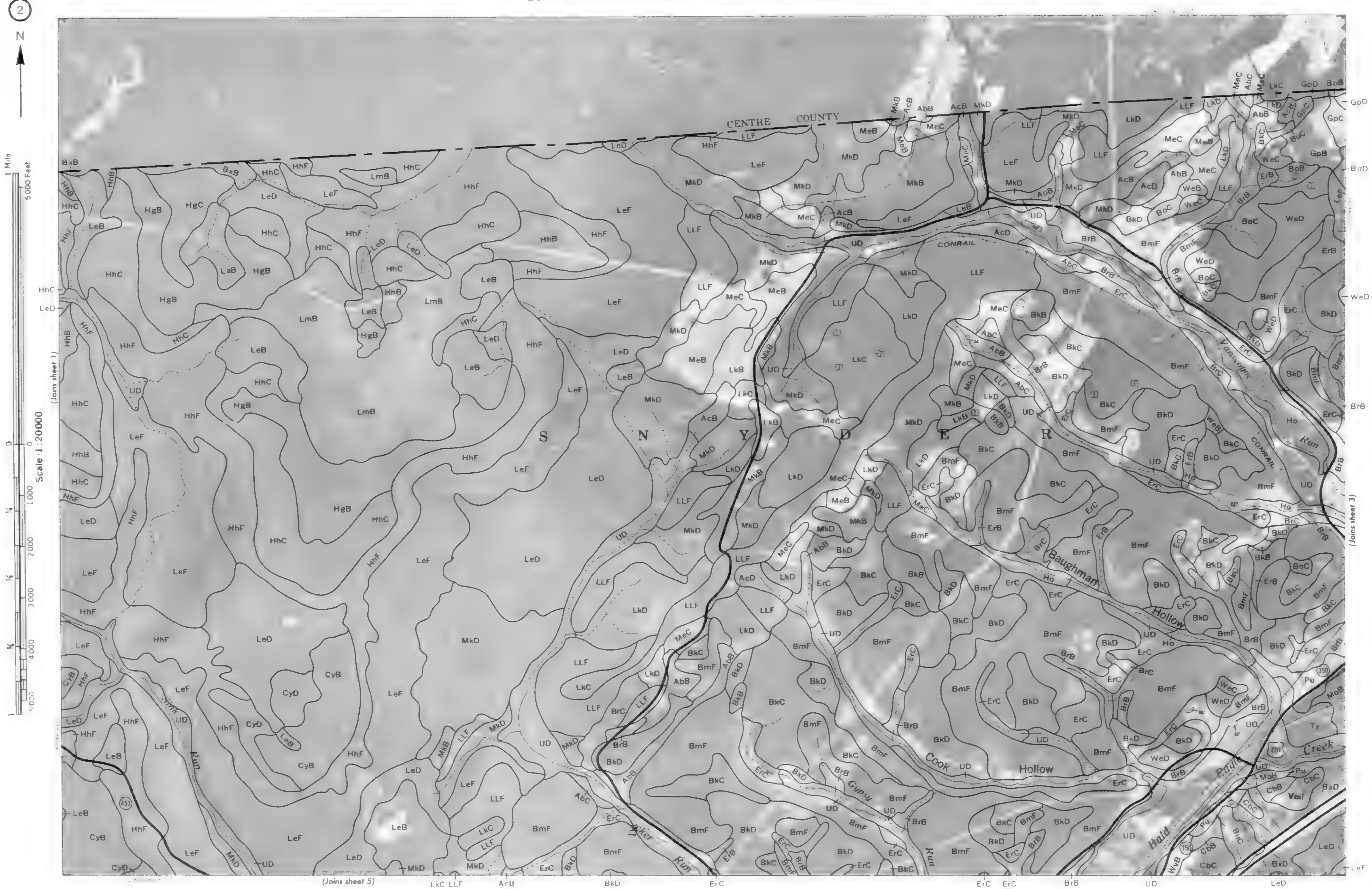
(Joins sheet 4)

N

1 Mile

5000 Feet

Scale 1:20000

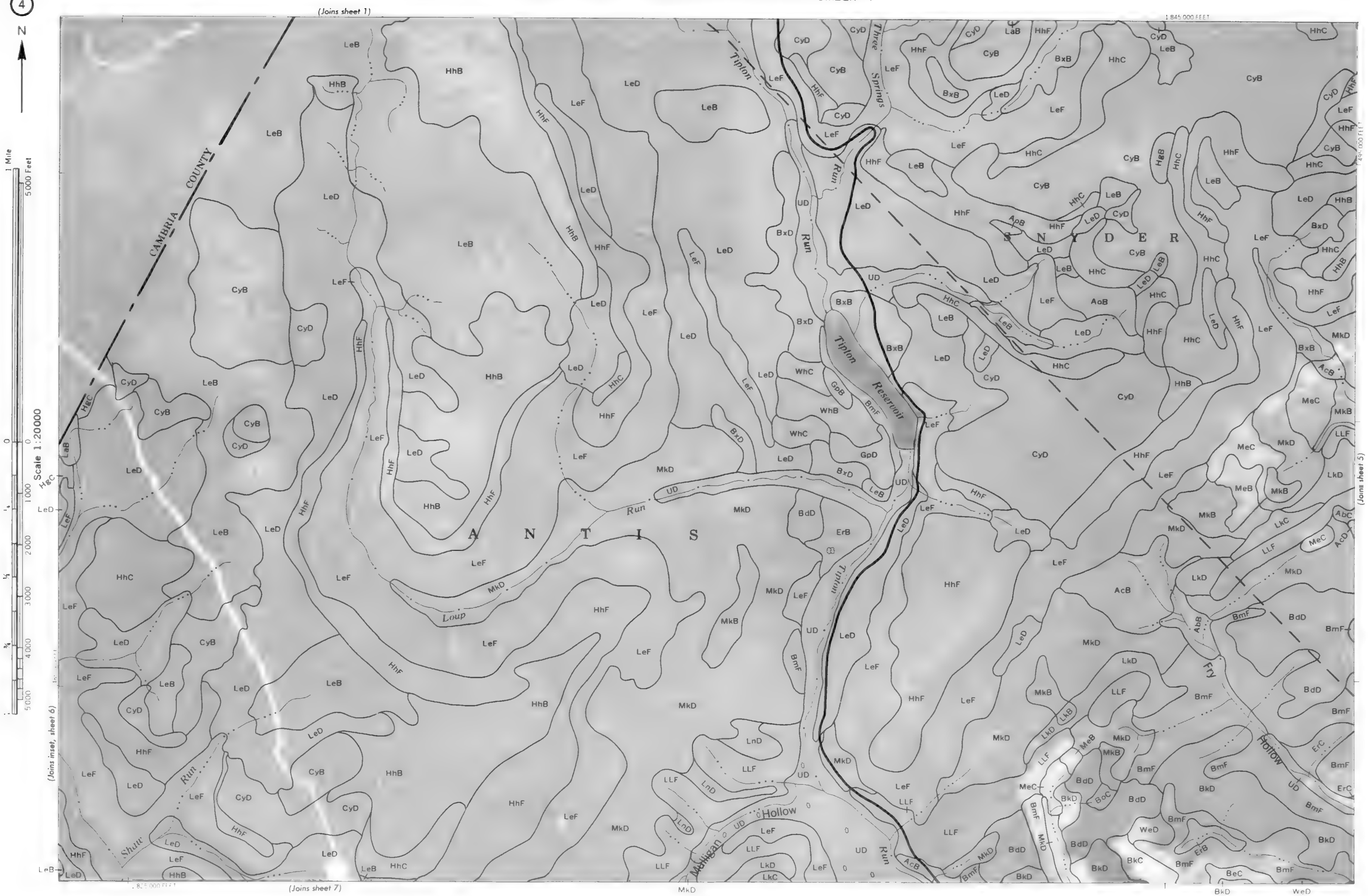

2
N
1 Mile
5000 Feet
Scale 1:20000
CENTRE COUNTY
S N Y D E R
CONRAIL
Vanscoyoc Run
Baughman Hollow
Cook Hollow
Gypsy Run
Creek
Vail
(Joins sheet 1)
(Joins sheet 3)
(Joins sheet 5)

3

N

1 Mile
5000 Feet

Scale 1:20000


4
N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 1)
(Joins sheet 5)
(Joins sheet 7)
(Joins inset, sheet 6)
1 845 000 FEET
1 825 000 FEET
CAMBRIA COUNTY
A N T I S
S N Y D E R
Tipton Run
Three Springs
Tipton Reservoir
Loup Run
Tipton
Fry Hollow
Mulligan Hollow
Shaw Run


TYRONE
SNYDER
BALD EAGLE
BRUSH MOUNTAIN
Tyrone Reservoirs
Schell Run
Hutchinson Run
Little Juniata River
Bald Eagle Creek
Eagle Hollow
Plummer Run
Northwood
Tyrone Forge
Ironville
Neelmont
Grazierville
Gray
(Joins sheet 2)
(Joins inset, sheet 9)
(Joins sheet 4)
(Joins sheet 8)
(Joins sheet 9)
HUNTINGDON COUNTY
CONRAIL
N
1 Mile
5000 Feet
Scale 1:20000
1 INCH = 1666.67 FEET
1 INCH = 5000 FEET

6

N

Scale 1:20000

1 Mile 0 5000 Feet

1 Kilometer 0 1000 2000 3000 4000 5000

1 800 000

1 819 000 FEET (Joins upper right)

1 820 000 FEET (Joins inset)

1 480 000 FEET

4000 AND 5000 FOOT GRID TICKS

CAMBRIA COUNTY

INDEFINITE BOUNDARY

Bells Gap Run

Shaw Run

Green Run

Peth Run

Spring Run

Kelso Run

Pancake Flats

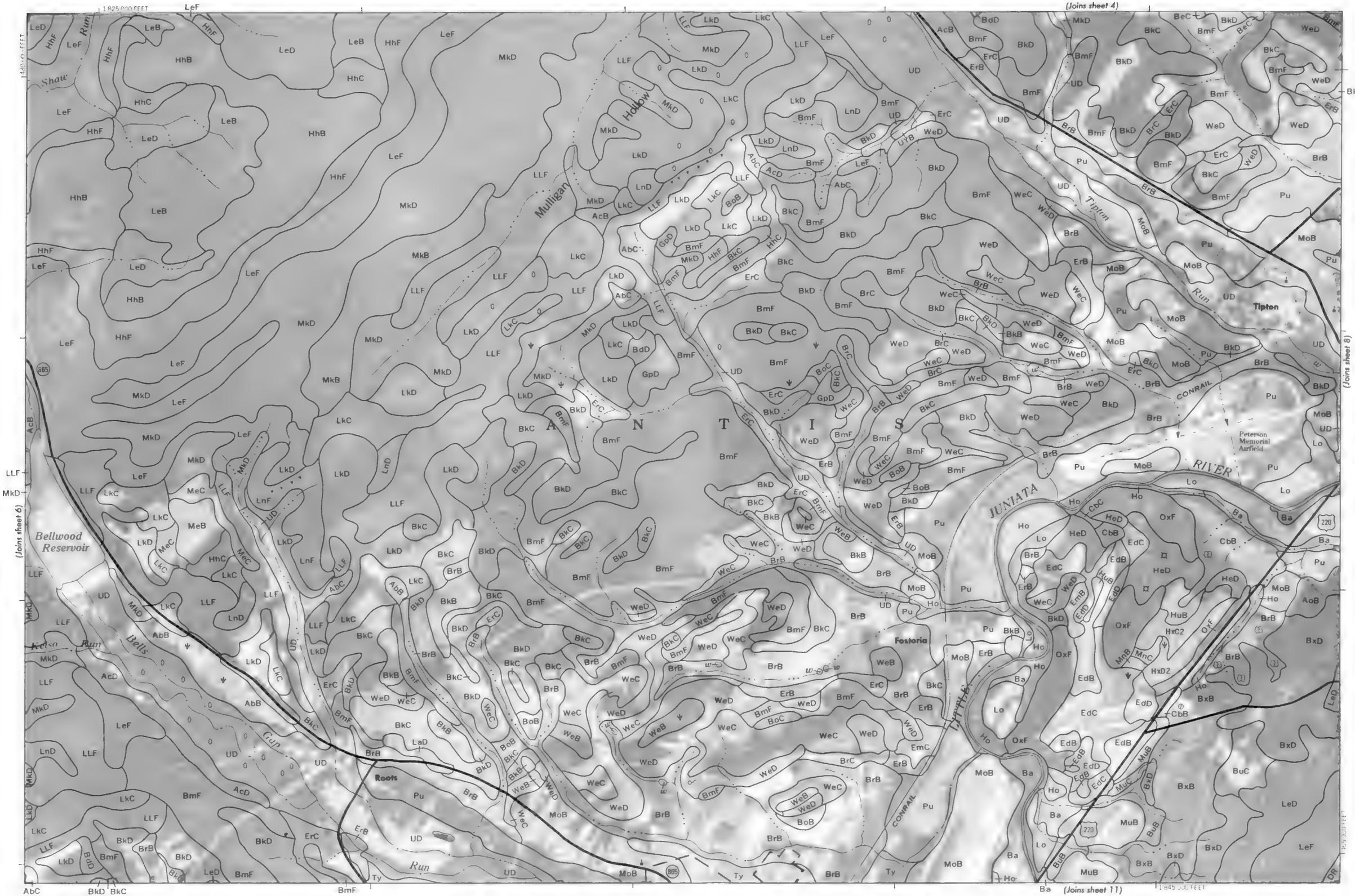
A N T I S

US

(Joins sheet 4)

(Joins sheet 7)

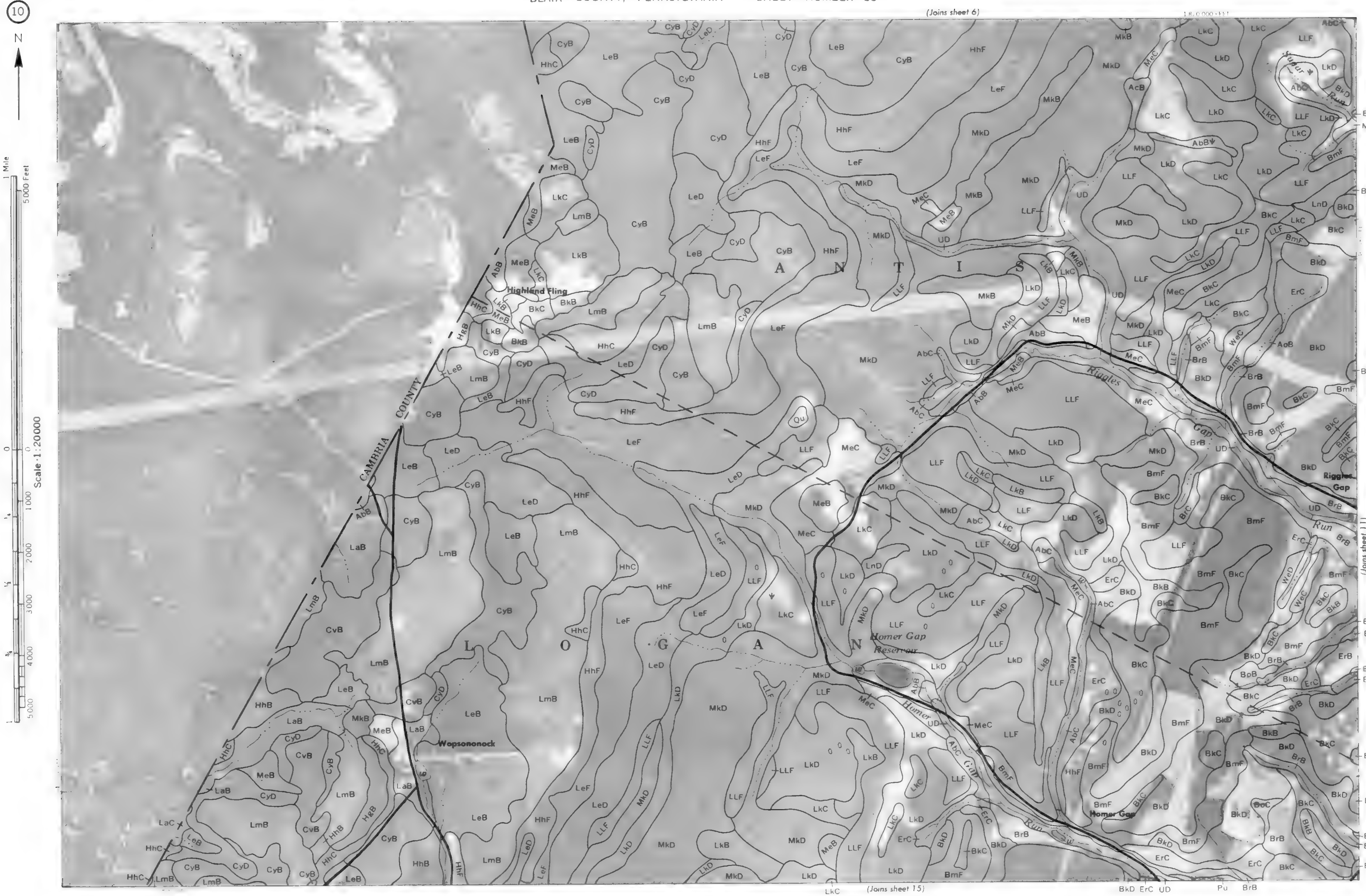
(Joins sheet 10)


1,825,000 FEET
(Joins sheet 4)
(Joins sheet 6)
(Joins sheet 8)
(Joins sheet 11)
1,845,000 FEET
Shaw Run
Mulligan Hollow
Bellwood Reservoir
Kelso Run
Bells Run
Roots Run
Tipton Run
Fostoria
Tipton
Peterson Memorial Airfield
CONRAIL
LITTLE JUNIATA RIVER
ANTIS
865
220
7
N
1 Mile
5000 Feet
Scale 1:20000


N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 5)
(Joins sheet 7)
(Joins sheet 9)
(Joins sheet 12)
ANTI SNYDER MOUNTAIN
BRUSH TYRONE
SNYDER
Charlottsville
Skelp
Run
Hollow
Honest
Pine Hill
CONRAIL
U.S. RTE. 220
L.I.T.I. F.
QUARRY

sh 5)


1 875 000 FEET
490 000 FEET
MsD
(Joins sheet 8)
HuC
HeD
HxC2
BrC
(Joins sheet 13)
Pine Hill
LITTLE
TYRONE
VALLEY
SINKING
HUNTINGDON
COUNTY
JUNIATA
RIVER
CONRAIL
(Joins sheet 3)
(Joins sheet 5)
1 874 000 FEET
1 879 000 FEET
494 000 FEET
3000 AND 5000-FOOT GRID TICKS
1 898 000 FEET
9
N
1 Mile
5000 Feet
Scale 1:20000


10
N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 6)
(Joins sheet 11)
(Joins sheet 15)
CAMBRIA COUNTY
Highland Fling
Wopsononock
A N T I S
L O G A N
Riggles Gap
Homer Gap Reservoir
Homer Gap
Homer Gap Run
Riggles Gap Run
Sugar Run


1 825 000 FEET
460 000 FEET
(Joins sheet 7)
(Joins sheet 10)
(Joins sheet 12)
(Joins sheet 16)
Reightown
Bells Gap Run
Bellwood
Suyar Run
Riggles Gap Run
Pinecroft
ANTIS
JUNIATA
LOGAN
MOUNTAIN
BRUSH
RIDGE
CONRAIL
220
220
1 Mile
5000 Feet
Scale 1:20000
N
11


12
N
(Joins sheet 8)
(Joins sheet 11)
(Joins sheet 13)
(Joins sheet 17)
BRUSH MOUNTAIN
TYRONE VALLEY
SINKING VALLEY
BRUSH MOUNTAIN
CATHARINE
Culp
Sinking Run
Sinking
Canoe Creek
1 870 000 FEET
460 000 FEET
450 000 FEET
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
0
¼
½
¾
1


OuC
1 875 000 FEET
WyB
(Joins sheet 9)
LeD
MuB
OxF
OuD
HxC
EdC
EdB
BrB
BrC
BxD
BmF
LeF
HhF
HhC
HhB
CbC
MoB
Spring Run
Lp
MkB
MkD
LnD
LnF
TYRONE
HhF
LeD
AcD
DR
MOUNTAIN
BRUSH
CATHARINE
Creek
BxB
AoB
BrB
CANOE
HUNTINGDON COUNTY
Canoe
(Joins sheet 12)
(Joins sheet 18)
1 460 000 FEET
HUNTINGDON COUNTY
JUNIATA R
FRANKSTOWN BR
1 895 000 FEET
13
N
1 Mile
5000 Feet
0
Scale 1:20000
5000
4000
3000
2000
1000

(14)

N

1 Mile 5000 Feet

Scale 1:20000

15

N

CAMBRIA COUNTY

(Joins sheet 10)

(Joins sheet 14)

(Joins sheet 16)

(Joins sheet 20)

Orners Corner

Juniata Gap

Devils Elbow

Red Hill

Beverly Hills

Newburg

ALTOONA

Dry Gap Run

Mill Run

Mill Run Reservoir

CONRAIL

1 Mile

5000 Feet

Scale 1:20000

BLAIR COUNTY, PENNSYLVANIA — SHEET NUMBER 16

16

N

Scale 1:20000

1 Mile 5000 Feet

0 ¼ ½ ¾ 1 0 1000 2000 3000 4000 5000

(Joins sheet 11)

(Joins sheet 15)

(Joins sheet 17)

EdD (Joins sheet 21)

AcB

ALTOONA

East Altoona

Greenwood

Pottsgrove Reservoir

Homer Gap Run

Kettle Run

Sandy Run

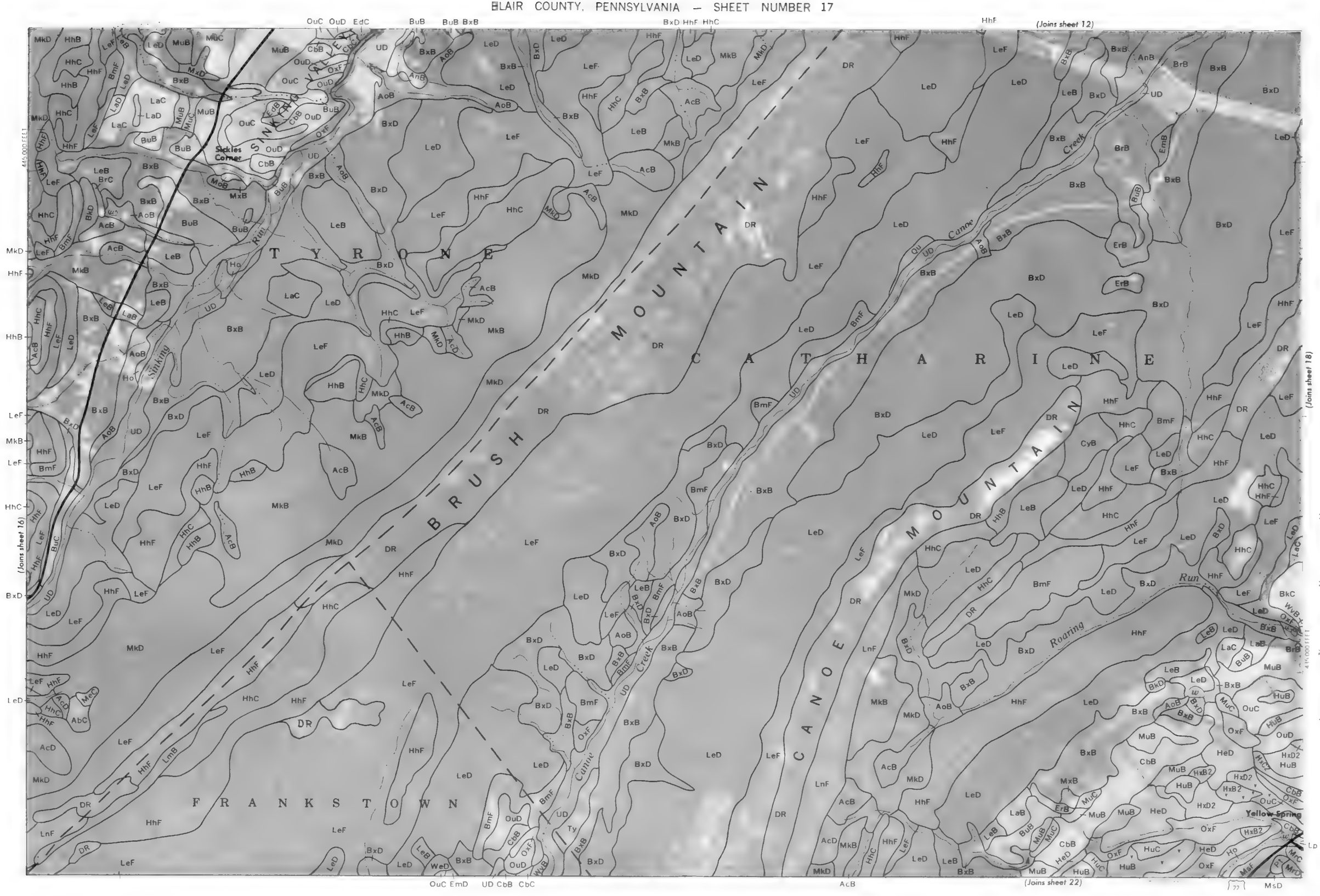
Sinking Run

CONRAIL

ANTIS MOUNTAIN

LOGAN BRUSH MOUNTAIN

DR


TYRONE MOUNTAIN
BRUSH
FRANKSTOWN
CATHARINE
CANOE MOUNTAIN
SINKING VALLEY
Sinking Run
Canoe Creek
Roaring Run
Clover Creek
Yellow Spring
Sickles Corner
(Joins sheet 12)
(Joins sheet 16)
(Joins sheet 18)
(Joins sheet 22)
445,000 FEET
415,000 FEET
1 Mile
5,000 Feet
Scale 1:20000


18
N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 13)
(Joins sheet 17)
(Joins sheet 23)
CANOE VALLEY
CATHARINE
Fox Run
Blairfour
Roaring Run
Mount Etna
Spring Run
Yellow
JUNIATA RIVER
BRANCH
HUNTINGDON COUNTY
FRANKSTOWN
TUSSEY MOUNTAIN
CONRAIL

N

(Joins sheet 14)

(Joins sheet 20)

(Joins sheet 24)

ALLEGHENY

Chestnut Flats

Glenwhite Run

Sugar Run

Sugar Run Gap

Killanning Run

CONRAIL

COUNTY

CAMBRIA

1 Mile

5 000 Feet

Scale 1:20000

N

1 Mile
5000 Feet
Scale 1:20000
0 ½ 1 1000 0
¼ ½ 2000
¾ 3000 4000
5000

(Joins sheet 15)
(Joins sheet 19)
(Joins sheet 21)
(Joins sheet 25)

L O G A N

A L L E G H E N Y

ALTOONA

L O G A N

Allegheny Reservoir
Kittanning Reservoir
Lake Altoona
Mill Run
Burgoon Run
Sugar Run
Coburn
CONRAIL
water

(Joins sheet 16)

(Joins sheet 20)

(Joins sheet 22)

(Joins sheet 26)

21

N

1 Mile

5,000 Feet

Scale 1:20000

ALTOONA

Kettle Creek

Kettle Reservoir

Brush Run

Brush Creek

Elberta

T Y R O N E M O U N T A I N

L O G A N

B R U S H

F R A N K S T O W N

T U R K E Y

V A L L E Y

Creek

22

N

1 Mile

5000 feet

(Joins sheet 21)

Scale 1:20000

0 0 1000 2000 3000 4000 5000

(Joins sheet 17)

FRANKSTOWN

CANOE MOUNTAIN

Township

SHORT MOUNTAIN

CATHARINE

Point View

FRANKSTOWN BRANCH

Run

Creek

Canoe Creek

Flowing Spring

Springfield Junction

Ganister

water

CONRAIL

LOCK MOUNTAIN

RIVER

(Joins sheet 23)

(Joins sheet 27)

(Joins sheet 18)

(Joins sheet 22)

(Joins sheet 28)

23

N

1 Mile

5000 Feet

0 0

Scale 1:20000

1 1,000

½ 2,000

¾ 3,000

1 4,000

1,000 5,000

C A T H A R I N E

W O O D B U R Y

Carlim

Coverdale

FRANKSTOWN BRANCH

JUNIATA RIVER

CONRAIL

Schmucker Run

Snare Run

HUNTINGDON COUNTY

(Joins sheet 19)

24

N

1 Mile

5,000 Feet

Scale 1:20000

0 ¼ ½ ¾ 1

0 1000 2000 3000 4000 5000

Blair Gap

Stone Bridge

Gallitzin Spring

Adams Run

Redlick

Halldaysburg Reservoir

Reservoir

Duncansville Reservoir

Gillens Run

Maple Hollow Run

Spencer Run

Blair Gap

CONRAIL

COUNTY BOUNDARY INDEFINITE

CAMBRIA

ALLEGENY

JUNIATA

(Joins sheet 29)

(Joins sheet 25)

BLAIR COUNTY, PENNSYLVANIA — SHEET NUMBER 25

26

N

1 Mile

5000 Feet

0

Scale 1:20000

LOGAN

FRANKSTOWN

HOLLIDAYSBURG

Frankstown

Geeleytown

Juniata

Upper Reese

Reese

Linde Crossing

Brush Creek

Beaverdam Branch

Frankstown Branch Juniata River

Robinson Run

CONRAIL

(Joins sheet 21)

(Joins sheet 25)

(Joins sheet 27)

(Joins sheet 31)

N

1 Mile

5000 Feet

Scale 1:20000

0 ½ 1 2 3 4 5000

(Joins sheet 22)

(Joins sheet 26)

(Joins sheet 28)

(Joins sheet 32)

FRANKSTOWN

MOUNTAIN

BRANCH

JUNIATA RIVER

LOCK

WOODBURY

Canister Blue Hole

Wertz

Creek

Piney

Williamsburg

Shellytown

Horrell

CONRAIL

28

N

Scale 1:20000

1 Mile 5000 Feet

0 0

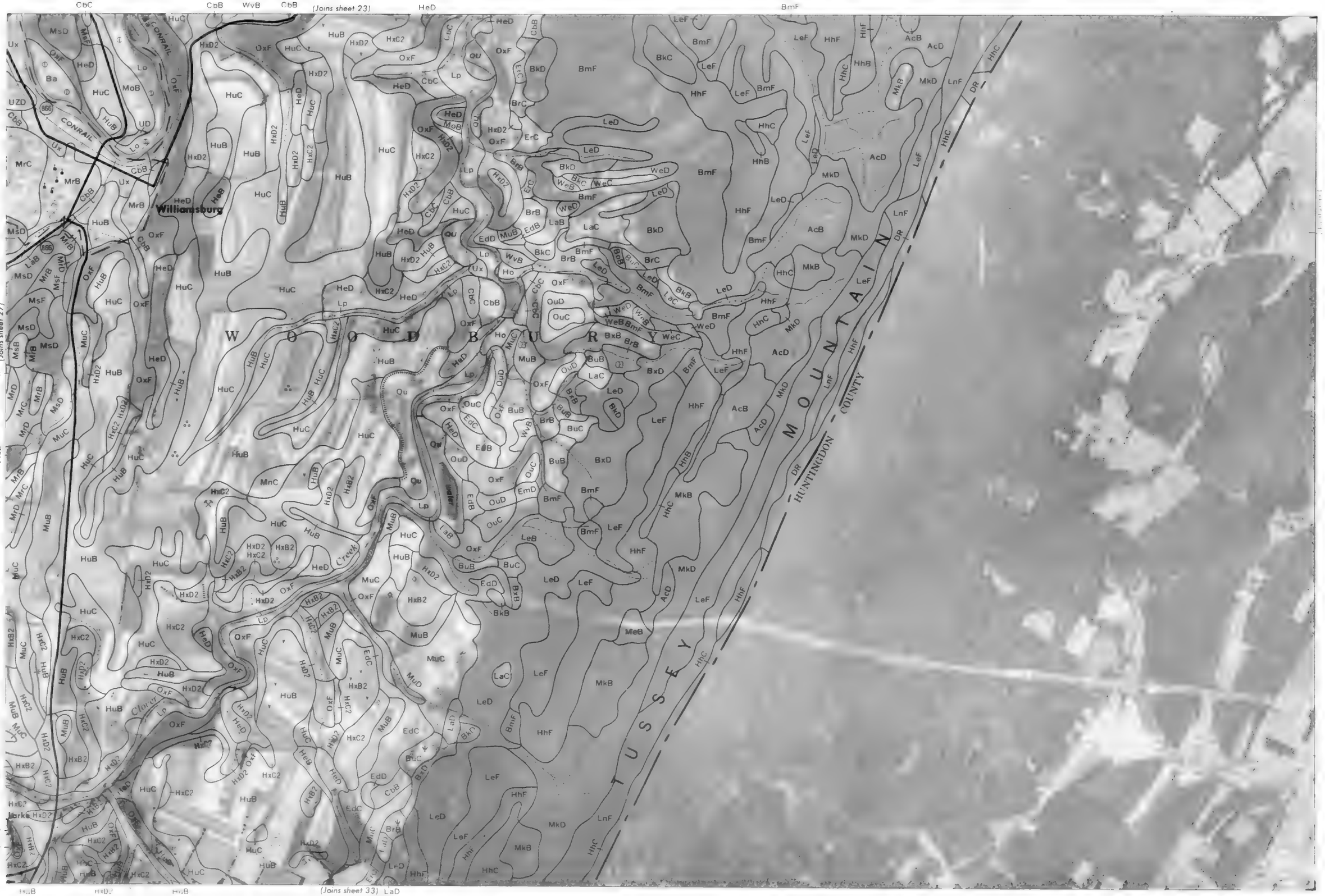
1/4 1000

1/2 2000

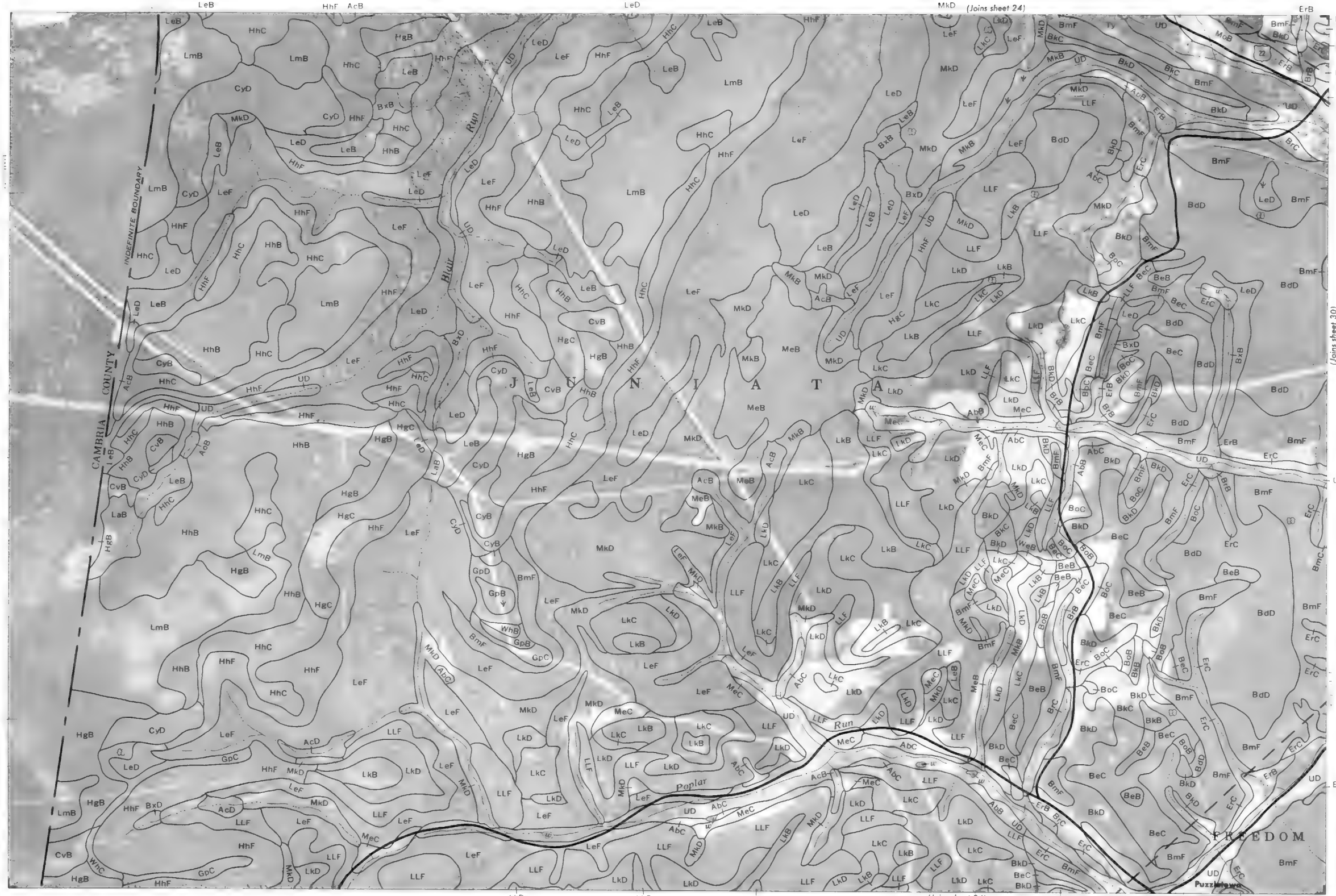
3/4 3000

1 4000

4000



BLAIR COUNTY, PENNSYLVANIA – SHEET NUMBER 29



30

N

1 Mile
5000 Feet
0
0
Scale 1:20000
1000
2000
3000
4000
5000

(Joins sheet 29)

(Joins sheet 25)

(Joins sheet 35)

(Joins sheet 31)

ALLEGHENY

Blair Gap

Foot of Ten

Dry Run

Poplar Run

FREEDOM

JUNIATA

BLAIR

Duncansville

Newry

HOLLIDAYSBURG

Chimney Rocks

Ridge

Catfish

RIVER

Klahr Station

BRANCH

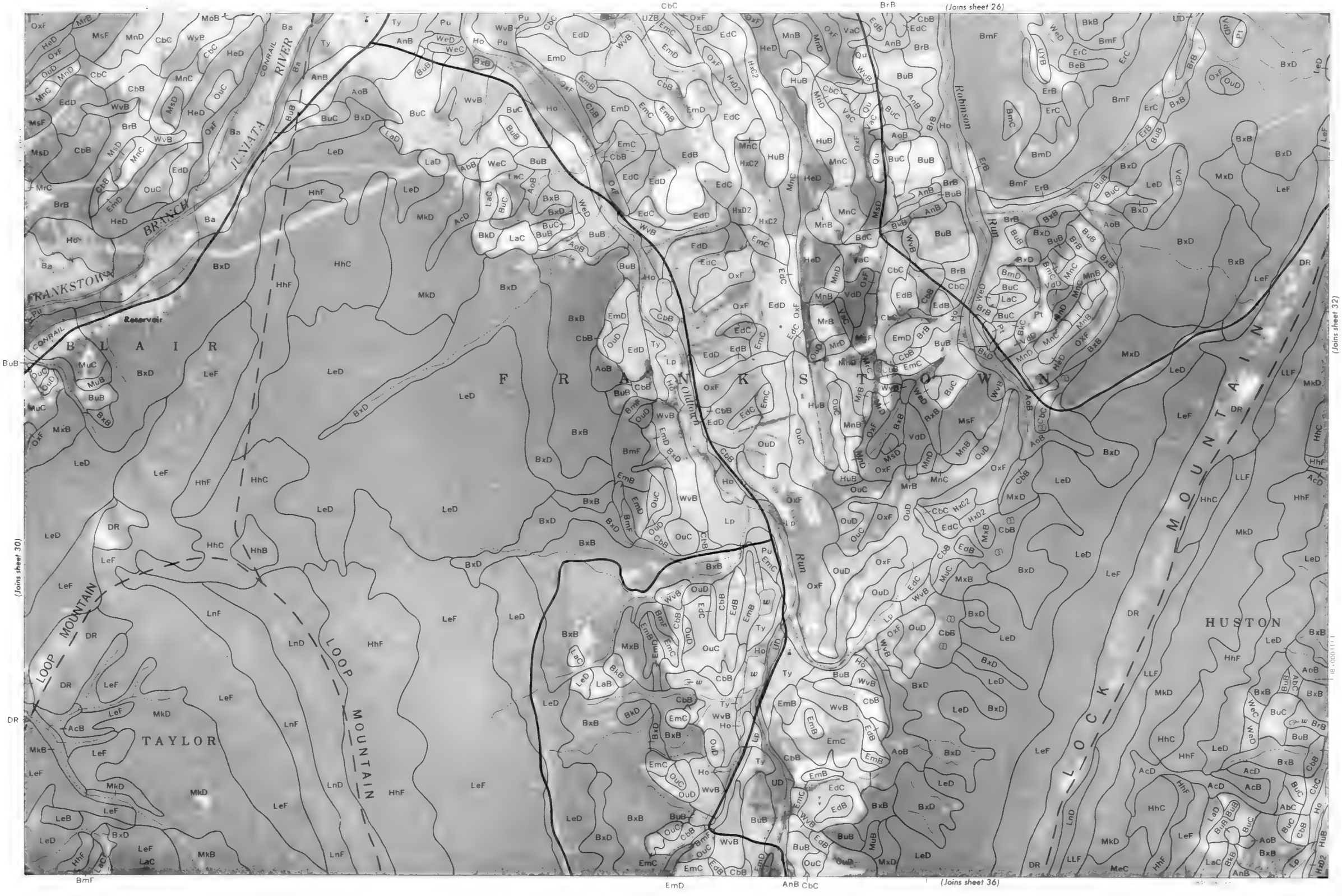
FRANKSTOWN

SHORT MOUNTAIN

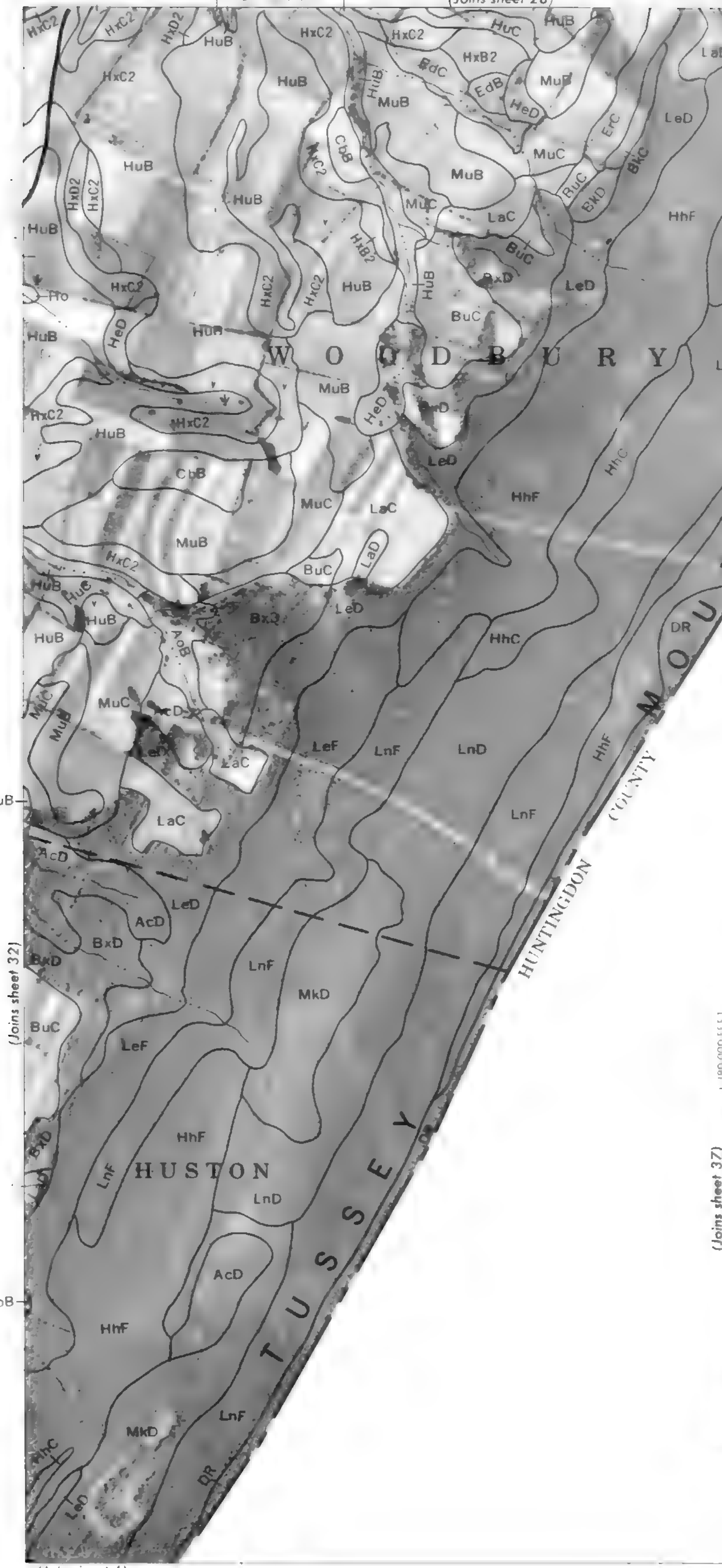
TAYLOR

CONRAIL

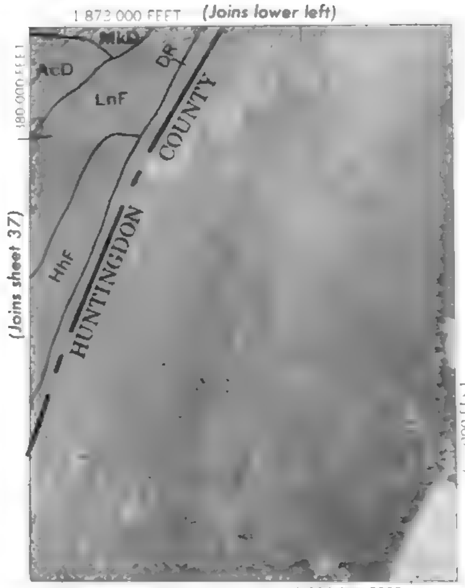
MuC
MnC
OxF
OuD
MxB
MkB


(Joins sheet 26)
(Joins sheet 30)
(Joins sheet 32)
(Joins sheet 36)
CONRAIL
RIVER
JUNIATA
BRANCH
FRANKSTOWN
Reservoir
Oldtown
Run
Robinson
B L A I R
F R A N K S T O W N
TAYLOR
HUSTON
LOOP MOUNTAIN
LOOP MOUNTAIN
LOCK MOUNTAIN
N
1 Mile
5000 Feet
Scale 1:20000


(Joins sheet 27)
(Joins sheet 31)
(Joins sheet 33)
(Joins sheet 37)
FRANKSTOWN
WOODBURY
HUSTON
Claypertown
CONRAIL
Piney Creek
Clover Creek
Scale 1:20000
1 Mile
5000 Feet
N



INSET A



INSET B

N

1 Mile 5000 Feet

Scale 1:20000

1 795 000 FEET

(Joins sheet 29)

(Joins sheet 43)

(Joins sheet 35)

(Joins sheet 39)

1 775 000 FEET

CAMBRIA COUNTY

Red Cap Hill

JUNIATA

Blue Knob

Blue Knob

Ritchey Knob

Pine Knob

Wolf Hollow

POSTETHWAIT MOUNTAIN

GREENFIELD

FREEDOM

Smith Corner


35
N
(Joins sheet 30)
(Joins sheet 34)
(Joins sheet 36)
(Joins sheet 40)
1 Mile
5000 Feet
Scale 1:20000
FREEDOM
SHORT MOUNTAIN
RUNNING MOUNTAIN
TAYLOR
BLAIR
Brooks Mill
Vicksburg
McKee
McKee Gap
Leamersville
East Freedom
ROARING SPRING
GREENFIELD
McDonald Run
South Dry Run
UD Run
Pawpaw Run
Halter Creek
Plum Creek
Ux Creek
BRANCH
FRANKSTOWN
CONRAIL
PENNSYLVANIA RIVER

36

N

(Joins sheet 31)

(Joins sheet 35)

(Joins sheet 41)

(Joins sheet 37)

1 Mile

5000 Feet

0

Scale 1:20000

0 1000 2000 3000 4000 5000

FRANKSTOWN

TAYLOR

HUSTON

LOYALSOCK MOUNTAIN

Plum Run

Oldtown Run

Plum Creek

East Sharpsburg

DR

LLF

BLAIR COUNTY, PENNSYLVANIA — SHEET NUMBER 37

38

N

1 Mile
5000 Feet

Scale 1:20000

1 770 000 FEET

365 000 FEET

1 340 000 FEET

350 000 FEET

CAMBRIA COUNTY

BEDFORD COUNTY

GREENFIELD

Bobs Creek

IRVIN MOUNTAIN

Smoky Run

Sutton Town

(Joins inset, sheet 43)

(Joins sheet 39)

(Joins sheet 43)

(Joins sheet 39)

LeF LLF MeC LeD MeB GpB GoB GpC BmF UD LkD LkC LkB HhB HhC HhF LeF LeD LLF MeB MkB AbB BrB BoB LaC LaD LeF MkD HhC HhF

BoC BkD BmF WeC BmD BrB ErB UD WeD Pu Ty Ba MoB BmC WeB BkC EdC MnD Lp

N

(Joins sheet 38)

(Joins sheet 34)

(Joins sheet 40)

(Joins inset, sheet 38)

Schaefer Head

Cattle Knob

Round Knob

Spruce Knob

Carson Run

Fredericksburg

South Poplar Run

Pine Run

Smoky Run

Lo Big Lick Branch

Klahr

Musselman Grove

GREENFIELD

BEDFORD COUNTY

1 Mile

5000 Feet

Scale 1:20000


N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins sheet 35)
(Joins sheet 39)
(Joins sheet 41)
(Joins sheet 43)
G R E E N F I E L D
T A Y L O R
D U N N I N G
M O U N T A I N
Claysburg
Frankstown Branch
Juniata River
Polecat Run
South Poplar Run
Cabbage Creek
Halter Creek
Ore Hill Ridge
Ore Hill
Bedford County
Conrail
220
36
867

BLAIR COUNTY, PENNSYLVANIA — SHEET NUMBER 41

41

N

Scale 1:20000

1 Mile

5000 Feet

1 825 000 FEET

1 850 000 FEET

1 845 000 FEET

(Joins sheet 36)

(Joins sheet 40)

(Joins sheet 42)

(Joins sheet 44)

T A Y L O R

N O R T H W O O D B U R Y

Martinsburg

Martinsburg Junction

Blair County Airport

Plum Creek

CONRAIL


42
N
(Joins sheet 37)
(Joins sheet 41)
(Joins inset, sheet 33)
Scale 1:20000
1 Mile
5000 Feet
H U S T O N
N O R T H W O O D B U R Y
Clover Creek
HUNTINGDON COUNTY
BEDFORD COUNTY

(Joins inset, sheet 38)

(Joins sheet 40)

(Joins sheet 44)

(Joins sheet 34)

(Joins sheet 38)

43

N

1 Mile 5000 Feet

Scale 1:20000

1 800 000 FEET

1 760 000 FEET

1 375 000 FEET

1 370 000 FEET

1 770 000 FEET

GREENFIELD

BEDFORD COUNTY

CAMBRIA COUNTY

PROCTOR MOUNTAIN

MILLER MOUNTAIN

Cotton Town

Saxton

CONRAIL

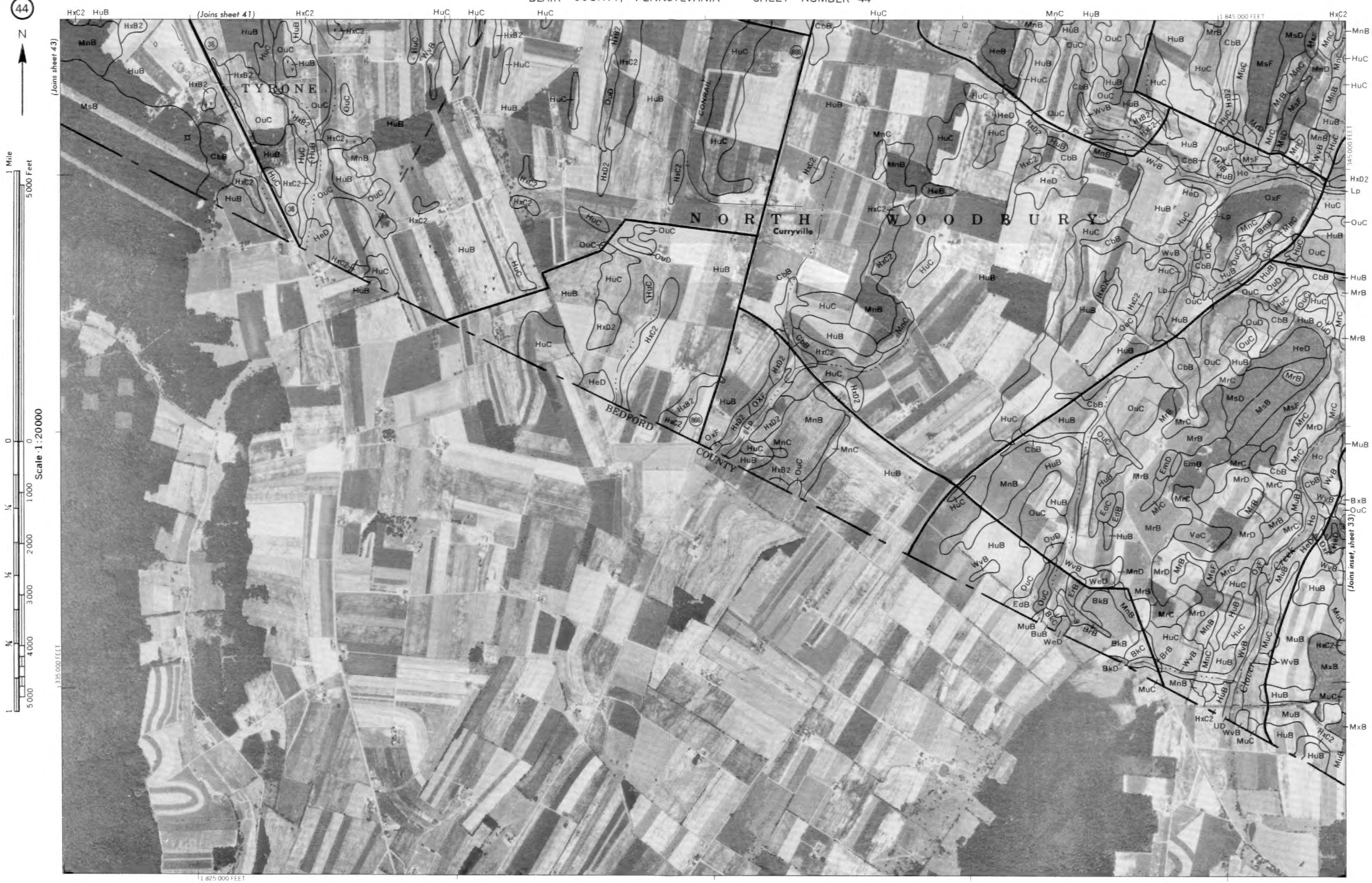
Beaverdam Run

Spring Run

Bolling Run

Piper Hollow

Diamond Run


44
N
(Joins sheet 41)
(Joins sheet 43)
(Joins inset, sheet 33)
TYRONE
NORTH WOODBURY
Curryville
CONRAIL
BEDFORD COUNTY
Clover Creek
1 845 000 FEET
1 825 000 FEET
345 000 FEET
335 000 FEET
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
1